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Official Organ of the Association for Child Psychology and Psychiatry

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BRIEF FOCAL FAMILY THERAPY WHEN THE CHILD IS THE REFERRED PATIENT—I. CLINICAL

ARNON BENTOVIM* and WARREN KINSTON†

INTRODUCTION

OVER THE past two decades there has been considerable interest in finding ways to shorten psychotherapeutic work, and generally increase the efficiency of psychiatric professionals via brief intervention methods (Malan, 1963; Sifneos, 1967; Parad and Parad, 1968; Small, 1971). This trend has only relatively recently become evident in the field of child and adolescent psychiatry, coincident with the development of theories and techniques which recognize the parents, extended family, and social network both as targets for change and agents of change (Skynner, 1969; Rosenthal and Levine, 1970; Argles and Mackenzie, 1970; Leventhal and Weinberger, 1975; Minuchin *et al.*, 1975).

Within the broad rubric of "family therapy", many treatment approaches have been used. Most of the shorter methods require an active technique with the therapist engaging directly with the family members, setting family tasks, openly acting as a model of healthy functioning, providing videotape feedback of interactions, interfering with dysfunctional behaviour patterns, advising, or consciously double-binding (Alger and Hogan, 1969; Beels and Ferber, 1969; Zuk, 1968; Haley, 1971; Crowe, 1973; Minuchin, 1974). Even those techniques more directly emerging from psychoanalytic theory, as described by Ackerman (1958), Dicks (1967), Zinner and Shapiro (1974) and Boszormenyi-Nagy and Spark (1973), involve considerably more therapist activity and direction than is customary in individual psychoanalytic therapy.

In our own growing experience of working with families conjointly over the past 10 years in the Department of Psychological Medicine at The Hospital for Sick Children, London, we have become impressed by the value of family intervention whatever the orientation of the therapist. Diagnostic work usually takes place in a family setting and wherever possible treatment aims are rapidly clarified so as to harness the charge of potential associated with the first meeting between a disturbed family and the professional (Haley, 1970). The problem then arises to determine an appropriate treatment technique to maintain and foster alterations in family functioning. Without a clear purpose or technique it is easy to allow work to become diffuse, commonly followed by various family members opting out. A particular problem is the emergence during family work of hidden problems and demands,

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most commonly in our experience in relation to long-standing, but carefully avoided, severe marital disturbance.

The success in shortening individual psychoanalytic therapy by using a focal approach (Malan, 1963; Balint *et al.*, 1972) suggested the application of a similar model to family work. A work-shop was set up to enable staff to develop a "family focus". An experienced staff member of the Tavistock Clinic's Brief Psychotherapy Work-shop agreed to act as Consultant and Group Leader during the first year (1973–1974) and cases were brought, family sessions written up, and the treatment process followed. This paper exemplifies the clinical work done with this "brief-focal" model. The results are set out in a second paper (Kinston and Bentovim, 1978).

THE WORKSHOP PROCEDURE

Following the Department's full diagnostic procedure, the case was brought by the therapist(s) who provided the workshop members with details of the referral, a brief description of the family, and the salient pathological factors with elaboration as necessary. The workshop developed a hypothesis to explain the symptom in terms of the salient factors and a minimum of psychodynamic understanding. This "focal hypothesis" then became a reference point for therapeutic progress, and a source of predictions for assessment of success or failure of the treatment. The actual treatment is determined by the "focal plan" which suggests how the desired change is to be brought about. This plan varied from straightforward direction to the therapist, e.g. "interpret the dynamics, i.e. the focal hypothesis", or "get Father to go out more with Mother", to more subtle demands, e.g. "clarify communication" or "increase sharing of feelings". The values of the workshop were psychodynamic insofar as there was emphasis on the importance of developmental factors, the needs of the family members to feel understood, and the necessity for a working alliance. As the treatment unfolded, new phenomena or information sometimes came to light which demanded a revision of the focal hypothesis or focal plan. To illustrate the process of developing a focal hypothesis and arriving at and implementing a focal plan, two cases will be described. In the first a focal plan could be formulated early and worked with consistently to termination, while in the other it could only be arrived at over a period of time as the therapists worked to create a "shape" in the diffuseness of the pathology.

CASE 1: MARGARET AND HER FAMILY

Family

Margaret's family consisted of her father (43 yr) and mother (37 yr), both secondary school teachers, and two sisters. Margaret at 10 yr was the youngest, Alice was 13 yr and June 15 yr.

Referral

Although Margaret had suffered from complex tics since the age of four, these had become increasingly frequent and severe. The abnormal movements included sniffing, coughing, snorting, sudden teeth clenching, flapping of the elbow, slapping her chest or thighs with both hands, and sudden stamping on the floor.

Salient facts from the history

Family history of illness: Maternal grandmother—chronic arthritis. Three paternal uncles—all with moderately severe depression.

1964: Mother suffers a depression (Margaret is 6 months).

1967: The family moves from the north of England to London, Margaret (4 yr) commences school and her symptoms appear. Mother starts at a teachers' training college.

1970: Father becomes redundant, but appears unconcerned. June (12 yr) has tension headaches followed by eye-blinking. Mother has a recurrence of her depression.

1971: Father then takes up teachers' training. June's symptoms remit.

1973 (time of referral): Margaret's symptoms worsen. Father is in his first year as a teacher at a school with high academic standards but pupils of mediocre ability, and mother is also teaching. Both parents are extremely conscientious about their jobs and work hard to be successful. This attitude extends to home life, with father doing chores which could be done by other family members and Mother doing a great deal for the children and effectively treating them as if they were much younger than they are.

Observations of family interaction

(a) There was a marked restriction of verbal and non-verbal expression of feelings, and communication generally was marked by inhibition of activity.

(b) Feelings of anger, depression and areas of conflict were avoided by all family members. Father, particularly, was not able to tolerate and respond supportively to his wife's depression.

(c) The family as a group depreciated itself, and members failed to express appreciation of each other.

(d) Each family member had excessively high standards of performance for himself and for the others, resulting in a sense of failure in the family atmosphere. This extended to the parent's sexual relationship.

Dynamic hypotheses

After combining the salient facts with the observations at interview, two focal hypotheses were determined.

1. Margaret's tics were a way for her to deal with feelings which could not be communicated within the family atmosphere of inhibition, and with a desire for activity which had to be suppressed in accord with the same family rule.

2. The excessively high standards together with the lack of mutual support and appreciation within the family meant that the members' self-esteem and sense of well-being could not be maintained.

Focal plan

In this case, the plan follows from the hypotheses in that the aim is to help the family appreciate the extent of the inhibition they impose on themselves, to promote freer communication of feelings, and to encourage expression of mutual appreciation within the family. A series of 10 interviews were suggested for the carrying out of this plan . . . the interviews to be scheduled at 3 weekly intervals approximately.

Developments in treatment

The 10 interviews extended from November 1973 to June 1974. Initially sharing of feelings and free communication between family members was frustrated by June who routinely came between the parents and overwhelmed Mother at the expense of the other children. This was observed in the sessions and reported by the family. At home she monopolized Mother, particularly late in the evenings, and so prevented the parents from being together. She was actively in competition with her younger siblings and failed to appreciate their interests and capacities. The therapists pointed out that the parents were allowing June to cross the generational boundaries and prevent them having an adult relationship. They were also letting her prevent them from responding to the other children and their needs. June's role in the family and the family's collusion in its maintenance having been clarified and challenged, Mother's difficulties became apparent. She had a tendency to take over for the children and to speak for them. This over-protectiveness was foiling their emancipation which she both wanted and dreaded. Mother's dependency needs had not been adequately met due to her own mother having suffered from an arthritic condition. She took her needs to professional colleagues rather than to her family. Father emerged as a family scapegoat in spite of, or perhaps because of, his efforts to live up to family expectations and meet his own ideals. His efforts left him and the family frustrated.

An extract from the second interview will illustrate some of these points:

After a period of limited spontaneous conversation, therapist B asked June, who had been lively in the previous session, why she was less lively on this occasion. The family informed the therapist that June was writing examinations. Mother added that June had got up early, panicked and did not seem to realize that panic would not help. June was at the stage where she did not have enough confidence—her parents had, her teachers had, but June did not. Therapist A commented that the family as a whole seemed frightened of trying anything new. He observed that although it was only June who had the exam, no one else seemed lively either. There then followed a spirited discussion as to how they had gone half a mile west of the hospital and had walked back from the tube station because they were early, and father had taken them the wrong way. Alice retorted that "he always did". June said: "I told him before we started but he wouldn't listen". Father then explained that he had done this to check whether cheap seats were available at a theatre for him to take the family after the interview. He did not tell them because he was afraid that they would be disappointed if his plan was not possible. He was also half afraid that June might say she wanted to go to a different show and he wanted to avoid challenging her over this. The family said that he tended to be secretive like this and wanted to make decisions silently, expecting others to read his mind without telling them what or why. Therapist B suggested that perhaps Father wanted to keep the plan secret to avoid arguments since he always wanted to be right. He agreed and the rest of the family laughed. June said Margaret was like that as well.

This extract illustrates the inhibition of communication, the fear of confrontation, the lack of appreciation, and the failed attempt to be ideal with consequent frustration. It also shows the style of therapist intervention and the family response. A subsequent interview with the parents alone clarified the patterns further. June had been conceived too soon after the marriage, at which time Father became increasingly concerned about financial security and the need to work more and Mother became depressed. This set the stage for distance between the parents, June's monopoly of Mother and conflict with Father, and subsequent dysfunction. The parents were poorly synchronized with each other in various areas of living, e.g. when one was sleepy, the other was wakeful. Their difficulty in achieving pleasure, emotional and sexual, within the family relationship was reflected in their over-emphasis of the importance of work, and cast a shadow on family life. When the family was more relaxed during holiday periods, Margaret's tics were very much less in evidence.

The family attended from a considerable distance and could accept that Margaret's tics were only a part of the problem and everybody and the family as a whole were in need of help. The inhibition of talking and involvement was particularly marked in the two younger girls. Alice behaved as a rather amused onlooker, while Margaret was quite passive apart from her tics which became more directly related to family stress during the course of therapy. Haloperidol was tried with some benefit at one stage, but was discontinued due to its side effects. The problem of inhibition within the family was raised by the therapists and worked on repeatedly, especially in relation to pleasure. There was a shared fear, most marked in Mother, that airing of such wishes might prove catastrophic, with the wish for pleasure taking over and stopping any work at all. Inhibition of anger was not dealt with in as much depth, except in relation to June's controlling ways with Mother. Father's fear of depression was also barely touched. The problems of self-esteem were worked on in various ways. Father was able to admit his anxieties over his performance at work. At home he was set the task of getting the children to do household chores and get round on their own. Both parents were encouraged to appreciate their children and vice versa. Previously efforts had been unnoticed, e.g. the children's achievements at work and music, or taken for granted, e.g. Father's organization of outings.

The workshop consensus was that the focal plan had been adhered to. Issues unrelated to the focal plan had emerged and been bypassed, e.g. sexual problems between the parents and sexual anxieties in the relationship between Father and June. The focal plan had been clearly understood by the family and they had changed in response to the therapeutic effort.

Short-term follow-up

The method we have employed lends itself to meaningful follow-up assessments, as the focal hypotheses by their nature provide criteria by which assessment of change may be evaluated (Malan, 1959). In the case of Margaret's family the criteria would be as follows: each member should have access to the whole range of emotions and be able to communicate freely within the family; intra-family criticism should be low and mutual support and appreciation should be evident; the atmosphere generally should be pleasant with no member suffering undue depression; the tics should be absent.

A follow-up interview 3 months later confirmed the impression of real change in the family and its members. At this interview the girls were more relaxed and interacted more freely. The family began by describing a recent incident when June was out with Margaret. Margaret had tried to take over the parental role, telling June not to eat chewing gum just before dinner. In order to change the subject June got Margaret to race her home, but June slipped in the mud and got quite plastered in mess—so much so that she felt quite unable to cope. This was recounted with much amusement. Margaret at this point stopped fidgeting and pointed out that she had helped June by picking up the shopping and making her a cup of tea. Therapist A suggested that it was as if June really felt knocked out of her grown-up role and thrown in a baby one, and half-expected Margaret to pick her up. The family laughed at the incongruity. Both June and Alice then talked about their grown-up activities. June described her recent boy-friend and Alice her drama classes. Margaret had also shown she was more grown-up: once her parents had forgotten to collect her from her girl's club and instead of just sitting down and crying as she would have done previously she telephoned to remind them. The interview contained much less mutual criticism although Mother felt that Margaret was more provocative and sometimes more babyish. The tics were much reduced. The family did not wish further help but wanted to keep a line open to the therapists if necessary.

Conclusion

In this family the focal plan was aimed at promoting freer communication, increasing mutual appreciation, and loosening inhibition of feelings. It was adhered to and succeeded in considerably alleviating the presenting symptom (tics), releasing the maturation processes in the "well" siblings, and permitting the parents a closer relationship with each other and a more realistic and gratifying relationship with their children, particularly with respect to fostering their emotional growth and development. Limitations are clearly apparent: the symptom is not totally removed, marital difficulties are still present, and individual members are still struggling with significant emotional problems. This family was given a rating of "some improvement"—on our scale of "no improvement", "some improvement" and "much improvement", and Margaret was rated as "much improved".

CASE 2: RACHEL AND HER PARENTS

Family

Rachel was a 5 yr old girl with a sister, Beth, 2 yr younger. The parents are in their early 30s and work professionally, having been brought up and trained abroad.

Referral

Rachel was referred with temper outbursts and excessive fearfulness and anxiety. Initially the case was dealt with by providing individual therapy for Rachel. Over 6 months a social worker saw mother or father (depending on who brought Rachel up for her session). However, while Rachel made good progress, the parents became increasingly disturbed. Both parents formed intense and somewhat sexualized relationships with the social worker and the mother became increasingly dependent. It was felt that such strong feelings might be appropriately directed towards each other rather than to the social worker who was not seeing them in a therapeutic setting which permitted resolution. Conjoint meetings including both parents, the social worker and a psychiatrist were arranged specifically to work on these problems after individual therapy with Rachel ceased. Beth's development and psychiatric status were within normal limits and as the focus was a marital one it was decided not to involve her in specific treatment.

Salient facts from the history

Both parents had major difficulties in their families of origin. Father's father, a school headmaster, was often absent during his childhood, and his mother was depressed and suicidal for many years. Mother, in her family, had always felt pushed out by a younger sibling, and her father had been absent also while being idolized by her mother. She denigrated her mother but felt identified with her. Both Rachel's parents found a solution (partially) in their work, and used their work role as a source of identity and a means of valuation as individuals. Even after marriage they had continued to use people, work and situations outside the marriage to obtain satisfaction for their needs, and did not turn to each other. Both worked very long hours, father especially leaving mother at home alone and depressed. They led separate lives.

Observations of marital interaction

Neither parent perceived the needs of the other and both avoided communicating about their own needs and pain. They expressed intense anger about their parents, their marriage and the therapists in a messy way, scattering cigarette ash around the room and using sexual talk similarly. Simultaneously they were frightened of the damage they might cause. They were unable to help each other; each emphasized his own vulnerability while being patronizing and critical of the other.

Dynamic hypothesis

Both parents have been unable to find their own identity and have obtained security via self-idealization. Each is frightened of intense primitive rage and neither is able to see the other in a real and caring way.

Focal plan

It took a number of sessions to formulate the above hypotheses and develop a workable focal plan. It was decided that the therapists should aim at making the therapeutic situation a containing environment where better communication could be established with consequent reduction of primitive fears, opportunity for contact with each other's personal reality, and the possibility of sharing and mutuality. Contact with their own capacity to care would both enable them to support each other and permit greater responsiveness to the children. It was decided that meetings should be held weekly for 6 months.

Developments in treatment

Not surprisingly, the focal plan was not easy to implement. Both parents wanted to be therapists: father was critical and mother patronizing, and the sessions were initially vague, messy and permeated with hostility. Mother was particularly angry about having to share the sessions and give up her idealized relationship. She had affairs which upset the marriage as well as disrupting the basis of the focal plan. Father was no less disturbed. Both showed defensive play-acting in the sessions with little openness or change in their behaviour and ways of relating. They initially pretended to meet the focus while looking for magical solutions outside the marriage as they had always done. Mother was pushed by father into the "sick role" and used it to gain attention.

An extract from an early session exemplifies the issues: Father reported his absolute fury and anger at finding that his wife was having an affair with a man whom he sees as being in a position of responsibility. He stated that he was so furious that he thought of leaving his wife, writing to the man (her boss) and "bashing him up". By the time of the session he just wanted to get rid of such awful feelings. He described his idea of marriage: an ordinary ideal everyday middle-class existence with extra stimuli from intellectual things and with each partner making the other stronger and cutting out weaknesses and failings. Therapist C queried the possibility of strength being built up by meeting each others needs rather than ignoring them. While father was saying that needs were not important, the therapist believed that weaknesses were just as important as strengths. Mother was distressed that therapist D did not share her view that there was nothing to apologize for over the whole affair. She suggested that forgetting was the best way of coping with anger and perhaps she just needed another man: Father had been unfaithful and she was just testing him to see if he cared. She knew that what he wanted was what she did not want. She wanted to be herself. Therapist C suggested that perhaps she did not really want to be married at all, and that there had been a good deal of deception and falsity in the marriage—playing at being married. Mother agreed that she liked to seem close to her husband in public, whilst being very distant at home; and father said that he was not ready for marriage. Both felt that there were many skeletons in both their cupboards. The therapists emphasized that despite its hurtfulness, Father's anger about the affair had not been destructive but rather evidence that he cared and provided attention for her. Mother claimed it was the attention that a naughty girl got from father and not the response she expected from a husband.

The next extract from a session about 2 months later shows the beginning of change which subsequently progressed further: Father stated that "when we talk, we block about needs—we don't seem to get anywhere". He then asked mother what her needs were. Mother replied "Can't we talk about them later? . . . well I need tenderness". Father said that he needed commitment. Mother then spoke about how unsatisfied she was with her mother, and therapist C referred to the difficulty she had in foregoing her individual sessions (with therapist D) and wondered about dependency. Mother reacted strongly: "dependency!? a horrid word—surely we don't have to be dependent on each other?" Father asked what was wrong with dependency and mother replied that it meant being controlled—people who are dependent on her are so puny and they are demanding and she cannot bear demands. She preferred angry people and then she could respond. Therapist C then pointed out that she seemed to perceive dependency as controlling and being controlled, overwhelming and being overwhelmed, and involving total submission rather than a part of herself being dependent on her husband and part of her husband being dependent on her. Father then asked "Why, if you are so afraid of dependence, why do you stay with me?" Mother broke down in tears and sobs, acknowledging she wants her husband, likes him, and really is dependent on him. Father moved his chair so he could comfort her and though mother said she liked it, she simultaneously shifted her position so that she was turned away from him. Her non-verbal contradiction of her verbal acceptance was made explicit in the therapy, and discussed.

Therapy was completed in 6 months as planned, and over this time communication improved and became more real and direct. The couple ceased attacking each other, and reduced their mutual denigration, hence they could move closer together. Their capacity to care for each other increased and at the end of the period, Mother became pregnant. Trust remained fragile and communication at times was difficult. Both showed changes as individuals: Father becoming more open, and Mother less attention seeking.

Short-term follow-up

In the case of Rachel's family the criteria derived from the focal hypotheses would be: the parents should obtain need gratification within the family as indicated by spending time together with pleasure; practical and emotional support should be evident; the parents should be able to describe themselves and each other in a realistic and sympathetic way; no member should be symptomatic.

At 5 months after the last session most of these criteria were met. Rachel's symptoms were fully abated, Beth continued well, Mother was enjoying domestication, and Father though angry and authoritarian was good humoured. The parents remained able to discuss problems and see each others point of view, sharing conflict and giving in when necessary.

Conclusion

Following a period of individual treatment of the child, marital problems became evident. Although a simple operational focus could not be defined, a plan was devised which enabled the therapists to sustain a therapeutic relationship and help the parents examine the similar personal problems which led them to marry and inevitably run into difficulties. The dynamic hypothesis guided the interventions which consistently aimed at confronting the idealized expectation of the other, and revealing each as a real person with needs which could be meaningfully gratified within the marriage. In this case both the family and the index patient received ratings of "much improved".

DISCUSSION

The two cases described above demonstrate the applicability of a time-limited active focal approach. The first case described was an integrated family with high motivation for change. The members showed willingness to accede to therapist directions and had no difficulty in accepting the authority of the therapist. The presenting symptom could be easily linked to family stresses, and the nature of the stress as experienced by individual members was in terms of easily understandable emotions. The required changes in interaction were not difficult to define and once the family were in a working alliance simply indicating problems led to alterations in family functioning. In the second case the therapists were faced with a quite different situation. Both parents were suffering from severe characterological disturbances and the marital relationship had few positive qualities for the therapists to begin work with. A simple description of dysfunctional aspects was impossible and the setting up of a working alliance was not to be taken for granted. It took longer to formulate a meaningful dynamic hypothesis and focal plan. Each of the parents were seen as similar: ignorant and frightened of their own needs and infiltrating their interactions with primitive aggression. The treatment focused on helping them form a real relationship rather than altering a number of unhelpful interactions. Not surprisingly more intensive work was required: 25 weekly sessions.

Other cases seen in the workshop improved as much as, or more than, the cases presented here; but many did not. This paper aims at characterizing the approach which we are convinced is a worthwhile and important one. It is not possible to comment in detail on the technical aspects of the work. The therapists were psychoanalysts, psychiatrists, psychologists and social workers, and their backgrounds and styles varied considerably. Using the criteria of the G.A.P. Report (1970) they were Position M therapists. They encouraged interaction between family members and took up verbal and non-verbal aspects of the interaction. The experiences and problems of individuals were not avoided but related to the family context and to other family members. The psychoanalytic method of connecting present feelings, thoughts, and behaviour patterns to past events and experiences in the family and to aspects of the families of origin was used and found to be helpful. The therapists aimed to foster integration for the individual members as well as for the family, and also to provide the opportunity for corrective experiences. They provided education about developmental and emotional factors in family life, set tasks, modelled parental roles, and used challenges to dysfunctional value systems. The most characteristic aspect of psychoanalytic therapy—vigorous and detailed examination of the transference—was not a feature of the work, although working with marital couples brought such issues more to the fore where they could not be ignored. The various specific techniques currently being developed by family therapists (e.g. sculpting, genograms, videotape feed-back) were not used, though they are clearly adaptable for the type of approach described here.

We agree with Rosenthal and Levine (1970) that the high therapist motivation for short-term work, the pressure due to the time-limit, the collaboration between family and therapist, the clear definition of goals, the clarification and use of family strengths, and the open invitation to the family to return if necessary are all major factors in the success of a brief approach. Goals, by themselves, are not enough to guide the therapist as it is commonly not apparent why the family members let themselves persist in interacting dysfunctionally. The perception of a "workable/meaningful focus" is an important aid to the therapist enabling him to use his skills and abilities without the diffusion of effort or inappropriate narrowing of attention which can occur so easily in work with families. Although our therapists have had considerable experience in many forms of individual and group treatments of varying orientations, none have had formal training in family therapy—for which, in any case, no standard technique has emerged. The focused approach became an easily assimilated "technique". A further factor in our success in this venture requires mention: the workshop. Malan (1963) indicated the power of the group to foster a particular philosophy and way of working. Not only does the discipline of having one's work scrutinized increase involvement and enthusiasm for the work itself, but its supportive (and sometimes critical) function enables the therapists to maintain role and not drift into colluding with the family system or lose the focus. Sharing one's knowledge of the family and reporting sessions enables transference and counter-transference difficulties to be more rapidly recognized. They need to be understood and dealt with, even though they will usually not be interpreted to the family. At this stage we cannot know how far being a workshop member increased the effectiveness of the work, and whether the skill of recognizing and pursuing a workable focus without support and lengthy discussion has been retained.

CONCLUSION

This paper describes a style of family work which initially derived from the brief individual psychoanalytic therapy developed at the Tavistock Clinic by Malan and co-workers. The approach is highly suitable for use in busy Child Guidance Clinics where the alternatives are no treatment at all, or occasional supportive interviews with counselling. Even where resources are available, the method may prove a treatment of choice offering an opportunity for the improvement of the context of the individual's emotional life. The approach emphasizes seeing the whole family or marital couple, determining a few dynamic hypotheses which organize the salient facts from the history with observations of family interaction, and then constructing a focal plan. This plan links with the hypotheses but is operational and serves as a guide and reference point for the therapist in his work with the family. The frequency of sessions varies from once- to six-weekly, and period of contact is between 3 and 9 months. The therapeutic technique is an active one which does not rest on any rigid theoretical ideas. A contract and working alliance are set up in the initial sessions which also provide further opportunity for alteration of the hypotheses or plan. The role of the workshop group in supporting the therapist and helping the therapeutic work is emphasized. Two cases with very different psychopathology and family pathology have been described as examples of the clinical process.

SUMMARY

The development of a method to carry out time-limited focused work with families is briefly described. Two case examples are provided to demonstrate the process of formulation of dynamic hypotheses, the development of operational plans for therapists, and the changes in the family with therapy. The value of the method and the importance of the workshop where it is being fostered and documented is discussed.

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STIMULANT EFFECTS ON COOPERATION AND SOCIAL INTERACTION BETWEEN HYPERACTIVE CHILDREN AND THEIR MOTHERS

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STUDIES of how parents interact with behaviorally disordered children are typically subject to circularity with respect to cause and effect. Given that there is an association between a particular style in the child and a particular style in the parent, does the parent's style represent a response to deviance in the child, or was the parent's style antecedent to or even the cause of the child's deviance? In the absence of detailed and accurate historical information (which can rarely be obtained in retrospect), there is no way of resolving this circularity. Investigators then retreat to theoretical positions which, however, cannot be justified empirically. It would be different if it were possible to improve abruptly a child's behavior and note whether the parent's behavior immediately accommodates itself to the new situation, or whether it persists in its previous characteristics. If the former is the case, then the parent's behavior is to be regarded as response. If the latter is the case, then parental style at least could still have been antecedent to the child's disorder.

In the context of investigating the effects of stimulant medication on hyperactive children's behavior, we have developed a paradigm for resolving this circularity. The characteristics of mother–child interaction in the unmedicated child are noted. Within an hour or two of the acute administration of a single dose of stimulant, the child's performance on a task improves and any corresponding change in the parent–child interaction can be noted.

The primary behavioral characteristic of the hyperactive child is an impulsive style (Laufer and Denhoff, 1957; Douglas, 1972; Sykes *et al.*, 1973). This impulsivity can be manifested as excessive motor activity, an inability to sustain attention which presents as distractibility, and impulsiveness in social interactions which can result in antisocial behavior.

Several recent investigations have focused on the nature of the interaction between hyperactive children and their mothers. Compared to mothers of children categorized as normal, or children suffering from a specific learning disability not involving hyperactivity, the interaction pattern exhibited by mothers of hyperactive children has been characterized by significantly more attempts at control, direction and, in general, structuring of their children's behavior (Bing, 1963; Bee, 1967; Campbell, 1973; Campbell, 1975).

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These findings have pointed to hyperactive children's perceived need for external control and/or their mother's need to exert control over them for the purposes of socialization or having them achieve (Campbell, 1973, 1975). The data leave unanswered the question of whether the nature of this mother–child interaction is modifiable by a drug-induced reduction of the symptoms of hyperactivity in the children. Does reducing the impulsivity of the hyperactive child by administering stimulant medication (methylphenidate) lead to an improvement in the performance achieved by him and his mother on a task which requires them to work cooperatively to reach a common goal? In addition to an improvement in performance, is the effect of medication to also promote more favorable social interaction between the hyperactive child and his mother? The present study investigated these questions within the context of the "one-dose, double-blind paradigm", a methodology developed and employed in the Neuropsychology Research Unit of The Hospital for Sick Children.

Previous work by our group (Kinsbourne, 1973; Swanson and Kinsbourne, 1976; Swanson *et al.*, in press), has demonstrated that the typical effect of medication on behavior can be observed after a single (acute) administration of methylphenidate. All studies we have conducted to date utilized tasks which focus on the effect stimulant medication has on the learning ability of hyperactive children. For the present experiment, a task was designed to measure the socially relevant variable of mother–child cooperation in the "one-dose, double-blind paradigm".

A commercially available toy, the Etch-A-Sketch, was adapted to present a two-dimensional, "self-paced contour tracking task" (Poulton, 1969) requiring the child (patient) to use both hands to control horizontal and vertical movements in navigating a maze. Humphries (1976) found that hyperactive children working alone on this task performed better when on medication than on placebo.

The present study extended the use of this instrument to involve the participation of a parent: one dimension of the contour tracking task was controlled by the child's mother and the other by the child. Thus, cooperation was necessary in order to stay within the boundaries of the maze and thereby reduce errors. This allowed us to measure the effect of stimulant medication on behavior, employing a task in which both the mother and the child were actively involved in producing a measurable performance, rather than measuring the performance of the child alone as has been the case in our previous work.

The task also corrected for a deficiency in previous studies of mother–child interaction. In past investigations (Bee, 1967; Campbell, 1973, 1975), children have typically been given a task to perform independently, while their mothers received instructions to assist them as much or as little as they wished. A bias may have resulted in which the opportunity for observing any spontaneously occurring instances of mother–child interaction was confounded by the mothers being forced to reach a decision about whether they should "intrude" on their children's activity. The present study removed the necessity of intrusion, by assigning the children and mothers equal responsibility for completing the task from the outset of their performance.

METHOD

Subjects

The subjects were 26 children diagnosed as "hyperactive" according to objective test procedures administered in a double-blind manner in the Neuropsychology Unit. All 26 children performed better on a paired-associate learning task (Swanson and Kinsbourne, 1976) when tested on medication than when on placebo. The nature of the paired-associate task and the performance on it of the subjects in the present study are described in detail in Swanson *et al.* (in press). A more detailed analysis of the favorable effect of stimulants on the performance of subjects on the paired-associate learning task has also been reported in Dalby *et al.* (in press). In our unit this task has been accepted as an external criterion for identifying hyperactive children who are "favorable responders" to stimulant medication and allowed us to exclude those hyperactive children who are adversely affected by stimulants. We are currently investigating the validity of this procedure with respect to long-term management.

In the present study, the diagnosis of favorable responders on the paired-associate task in the laboratory was further confirmed by a 3-week follow-up in which parents and teachers were able to report that the children also responded favorably to stimulant medication in the home and at school. Eighteen of the children were boys and eight were girls. Their mean age was 10·2 years with a standard deviation of 2 years. All children had a Full Scale I.Q. of 80 or above on the Wechsler Intelligence Scale for Children—Revised (WISC—R).

Approximately 30% of the children referred to the Neuropsychology Unit with symptoms of hyperactivity are classified as adverse responders by our procedures. Stimulant therapy is not instituted in these cases and the adverse responders were not investigated in the present study.

Apparatus

Two different types of mazes were drawn in red ink on clear sheets of acetate. Maze I consisted of alternating horizontal and vertical alleys which proceeded in step-like fashion from start to finish. Maze II was comprised only of diagonal alleys arranged in saw-tooth fashion and drawn at an angle of 45° to the horizontal. The width of the alleys in both mazes was a constant half a centimeter. A schematic representation of the two mazes appears in Fig. 1.

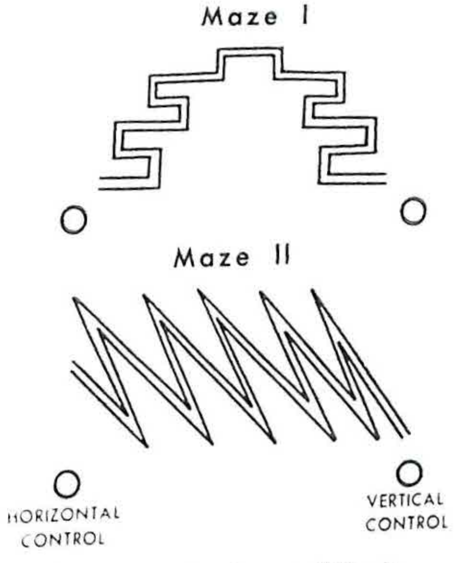

FIG. 1. Levels of maze difficulty.

Each of these mazes was mounted on the blank screen of an "Etch-A-Sketch" toy. An Etch-A-Sketch consists of a plastic frame enclosing an 18 × 13 cm rectangular screen, below which are located two control dials. Turning the left dial produces a horizontal line on the screen. Turning the right dial produces a vertical line. To produce a diagonal line, both dials must be turned simultaneously. Maze I requires alternating responses by the two partners. Mother and child complete their respective horizontal and vertical segments independently of each other, so cooperation on this task required only that a partner wait until the other participant finished before operating the alternate control. Maze II involved a more continuous, coordinated response by the partners due to the simultaneous effort needed to follow a diagonal path.

Procedure

A double-blind, crossover design was followed on an initial practice day and on a second data collection day. The purpose of the first day of testing was to give the subjects practice in working toward an asymptotic level of performance on the task, as well as to dispel any initial anxiety associated with the testing situation. This permitted measurement of the effect of medication on the second day relatively independent of the possible confounding influence of learning and anxiety.

On each day, both drug and placebo states were established (one in the morning and the other in the afternoon) by administering a clinically effective dose of methylphenidate (average dose 12·5 mg) or an equal amount of placebo, 30 minutes before breakfast and 30 minutes before lunch. Testing followed approximately 1 hour later. Methylphenidate apparently has a restricted active life, but an analysis of serum half-life in children has not been reported. However, behavioral time–response curves (Swanson *et al.*, in press) confirm the widespread clinical impression that, when taken orally, it starts to control hyperactive behavior in about 30 minutes and its effective duration is about 4 hours (Wender, 1971; Cantwell, 1975; Safer and Allen, 1976). These properties make it possible to establish alternate states (drug/placebo) within an individual in a single day.

Each mother and child were seated side by side at a table, the child on the right and the mother on the left. Instructions were identical for both Maze I and Maze II.

> By turning the dials on the Etch-A-Sketch, I would like the two of you to make a line going through this path from start to finish. You may take as much time as you wish to produce this line, but try to make as few mistakes as possible. A mistake is when the line the two of you are making goes outside the path like this. If you make a mistake, get back inside the path where you make it and keep going until you finish.
>
> To play this game, I want you (the child) to turn this dial on the right which only makes the line go up and down like this. Your mother will work this dial on the left which only makes the line go sideways, back and forth like this. I want you to each work your own dial only. You are not allowed to take over each other's dial, but you can say whatever you want to each other in order to get to the end of the path.

While a mother and her child were completing the mazes, the experimenter observed their interaction and recorded the following dependent measures. The percentage of agreement obtained between two independent observers in recording these dependent measures on both Maze I and Maze II, is reported in Table 1.

1. Time: the time taken to complete each maze was measured with a stopwatch.
2. Errors: the number of errors made on each maze was recorded. An error was counted whenever the line being produced overshot the boundaries of the path. An error was not counted if the line was judged to fall directly on the path boundary.
3. Verbal directions: a record was made of the number of verbal directions that mother and child gave to each other while completing each maze. Only utterances classifiable as obvious commands were recorded (e.g. Stop, Go, Turn, Slow Down). Vague comments like OK, All right, and Hey, were not recorded.
4. Praise and criticism: the number of times a mother and child praised and criticized each other's performance was recorded. Praise was defined as any clearly favorable, complimentary judgement made about one's partner's performance. Criticism included any unfavorable, derogatory judgements.

Design

The order of administration of medication was counterbalanced between subjects. Thus, order was the between subject variable. Half of the subjects received the order drug → placebo, while for the other half, the order was placebo → drug. Task (Maze I or Maze II) and drug state (placebo or methylphenidate) were the within subject variables.

TABLE 1. PERCENTAGE OF INTER-OBSERVER AGREEMENT FOR INTERACTIONS VARIABLES ON MAZE I AND MAZE II

Variable	Maze I	Maze II
Time	99·5	99·2
Errors	100·0	96·0
Mothers' directions	83·0	99·1
Children's directions	96·5	97·6
Mothers' praise	20·0	57·1
Children's praise	33·3	57·0
Mothers' criticism	62·5	92·0
Children's criticism	95·2	83·7

RESULTS

Table 2 presents the means and standard errors of the means for each of the eight dependent measures investigated in the four medication × maze type combinations (drug–Maze I, placebo–Maze I, drug–Maze II, placebo–Maze II). Since the standard deviations were proportional to the means, a log transformation was applied to the data before analyses of variance were performed. A univariate analysis of variance was carried out for each transformed dependent variable. The significant effects of these analyses will be discussed in turn.

Main effect of drug

The effect of medication (see Table 2) was to improve performance on all dependent measures except the time measure. In terms of differences between drug and placebo performance, this reflected a decrease in mother–child errors in the medicated state ($F = 27{\cdot}19$, $df = 1/24$; $P < 0{\cdot}001$), a decrease in mothers' directions to their children ($F = 25{\cdot}65$; $df = 1/24$; $P < 0{\cdot}001$), an increase in children's direction to their mothers ($F = 22{\cdot}79$; $df = 1/24$, $P < 0{\cdot}001$), an increase in the amount of praise both mothers ($F = 7{\cdot}61$; $df = 1/24$; $P = 0{\cdot}011$) and their children

TABLE 2. MEANS AND STANDARD ERRORS OF INTERACTION VARIABLES ON MAZE I AND MAZE II IN PLACEBO AND DRUG CONDITIONS

	Placebo				Drug			
	Maze I		Maze II		Maze I		Maze II	
Variable	M	SE	M	SE	M	SE	M	SE
Time	147·27	7·04	331·50	26·72	147·62	5·36	352·58	35·55
Errors	2·69	0·77	20·73	3·10	1·19	0·30	9·42	2·52
Mothers' directions	6·77	1·48	20·19	2·68	2·96	0·69	8·08	1·65
Children's directions	1·58	0·31	5·81	1·26	3·77	0·62	11·19	2·88
Mothers' praise	0·19	0·10	0·23	0·13	0·54	0·24	0·96	0·25
Children's praise	0·00	0·00	0·08	0·08	0·38	0·13	0·65	0·33
Mothers' criticism	0·69	0·21	2·31	0·60	0·00	0·00	0·12	0·08
Children's criticism	0·58	0·21	2·92	0·49	0·04	0·04	0·31	0·13

($F = 7{\cdot}24$; $df = 1/24$; $P = 0{\cdot}012$) gave to each other, and a decrease in the amount mothers ($F = 30{\cdot}03$; $df = 1/24$; $P < 0{\cdot}001$) and children ($F = 34{\cdot}82$; $df = 1/24$; $P < 0{\cdot}001$) criticized each other. An increase in the time taken to complete the task was associated with the overall pattern of improvement (reflected by the other seven dependent variables) for some subjects, but for other subjects, a decrease in time accompanied this pattern of improvement. The net result was that the time variable showed no significant effect of medication ($F = 0{\cdot}40$; $df = 1/24$; $P = 0{\cdot}53$).

Main effect of order

The main effect of order was not significant for any of the dependent variables.

Main effect of task

The results for Maze I and Maze II differed significantly for six of the eight dependent variables. The praise given by mothers to their children ($F = 3{\cdot}80$; $df = 1/24$; $P = 0{\cdot}06$) and children to their mothers ($F = 0{\cdot}64$; $df = 1/24$; $P = 0{\cdot}43$) did not differ significantly for the two types of mazes, although the trend was for more praise to be given by both partners on Maze II. The effect of task could not be clearly interpreted for praise given by mothers because of a drug × task interaction.

The remaining six variables revealed the following pattern: more errors occurred on Maze II ($F = 98{\cdot}59$; $df = 1/24$; $P = < 0{\cdot}001$), Maze II took longer to complete ($F = 94{\cdot}63$; $df = 1/24$; $P < 0{\cdot}001$), more directions were given by mothers ($F = 47{\cdot}93$; $df = 1/24$; $P < 0{\cdot}001$) and their children ($F = 15{\cdot}73$; $df = 1/24$; $P = 0{\cdot}001$) on Maze II, and mothers ($F = 11{\cdot}54$; $df = 1/24$; $P = 0{\cdot}002$) and children ($F = 31{\cdot}25$; $df = 1/24$; $P < 0{\cdot}001$) criticized each other more on Maze II.

Drug × order interaction

The interaction of drug × order was significant for the measure of mothers' directions ($F = 5{\cdot}80$; $df = 1/24$; $P = 0{\cdot}02$), time ($F = 22{\cdot}36$; $df = 1/24$; $P > 0{\cdot}001$) and children's criticism ($F = 5{\cdot}63$; $df = 1/24$; $P = 0{\cdot}03$). These significant effects indicated that when placebo is given after drug, there may be a lingering effect of medication which produces a drug × order interaction. In the present study this effect was not large enough to attain statistical significance for all the dependent variables. In our previous work using other tasks, this same pattern has emerged but has been a small effect (Swanson *et al.*, in press; Dalby *et al.*, in press).

Drug × task interaction

The interaction of drug × task, which qualified the interpretation of main effects, was significant for the measure of errors ($F = 13{\cdot}31$; $df = 1/24$; $P = 0{\cdot}001$), mothers' praise of their children ($F = 4{\cdot}58$; $df = 1/24$; $P = 0{\cdot}04$), mothers' criticism of their children ($F = 6{\cdot}82$; $df = 1/24$; $P = 0{\cdot}02$), and children's criticism of their mothers ($F = 20{\cdot}90$; $df = 1/24$; $P < 0{\cdot}001$). The effect of medication on the error measure of performance was greater for Maze II than Maze I. This significant interaction was not due to differences in the variability associated with low and high means, since the transformation effectively equalized the variance. There was no difference in the amount of praise given by mothers on Maze I and Maze II in the placebo condition, when little praise was given; but in the drug condition, mothers gave more praise on Maze II than Maze I. For both mothers' and children's criticism of each other, there was little difference in criticism between Maze I and Maze II in the drug condition, when little criticism occurred; but in the placebo condition more criticism was given by both partners on Maze II than on Maze I.

Drug × order × task interaction

A significant drug × order × task interaction was obtained only for the measure of children's directions. On Maze I there was no difference in children's directions in the drug condition for the two orders, but in the placebo condition, more directions were given when the order was drug → placebo as opposed to placebo → drug. For Maze II, there was no difference in the two orders for the placebo condition, but in the drug condition more directions were given in the drug → placebo order than in the placebo → drug order. No explanation could be found for this complicated pattern of results.

DISCUSSION

Previous studies have revealed the considerable amount of control mothers attempt to exert over their hyperactive children (Bing, 1963; Bee, 1967; Campbell, 1973; Campbell, 1975). The present investigation clarifies this effect by demonstrating how mothers' felt need for such control can be significantly reduced by a single, acute administration of stimulant medication (methylphenidate) to the children. Furthermore, this improvement of the interaction between mothers and their hyperactive children was obtained not only for relevant aspects of social interaction which have been the primary focus in past research, but also on a performance measure that investigated the effectiveness of the mothers and their children in working as a team to achieve a common goal.

When the hyperactive children were in a medicated as opposed to a placebo state, they and their mothers made fewer errors on a maze tracking task, praised each other more, criticized each other less, the mothers gave fewer directions to their children about how to complete the task, and the children gave more directions to their mothers. Due to the fact that some mothers and their children performed at a faster pace in the drug condition than in the placebo condition, while others performed more slowly when the children were on medication, there was no significant difference in the time taken to complete the task for the drug and placebo states.

Bee (1967) observed the interaction of a group of "distractable" children and a second group of "non-distractible" children, with their mothers. Her conclusion was that distractible children are exposed to a relatively greater degree of maternal control and, accordingly, receive less training in how to function independently. Campbell (1973) pointed out that mothers exert more control over their hyperactive children particularly when the latter are engaged in relatively difficult tasks and concluded that the mothers were responding to the child's situation rather than exerting a causal effect. Our findings are consistent with Campbell's in that the mothers gave three times as many controlling instructions in the placebo condition when they and their children were working on the more difficult maze (Maze II), as compared to the relatively easy one (Maze I). More impressive, however, is the abrupt decline in the extent to which mothers exert control with regard to both mazes when the children were on effective medication.

The present findings provide a dramatic illustration of how the administration of stimulant medication can result in more independent functioning by hyperactive children, characterized by an improved ability to give constructive task-relevant suggestions to their mothers in an atmosphere of greater praise and less criticism. Correspondingly, a demonstration is also provided of the mother's sensitivity to their hyperactive children's new-found control when on medication. In the drug condition, rather than continuing to dominate their children with many directions as they did in the placebo condition, the mothers responded to their children's positive contribution by giving fewer directions of their own, more praise, and less criticism. The more difficult maze still elicited more errors and more controlling instructions from the mother, but the decrease in maternal control (which was actually overtaken in amount by the rising incidence of control exerted by the child) vividly illustrates the parent's ability to relinquish control as soon as the child's behavior makes this possible.

Such adaptability makes it difficult to argue that, by their nature, mothers of hyperactive children are inflexible individuals who maintain rigid control over their children, thus causing the children to rebel and behave in a disruptive manner. This point is particularly impressive in view of the fact that this adaptable change in style occurred within just a few hours following the administration of stimulant medication. Thus, it becomes increasingly clear that the mother's control does indeed represent a response, secondary to the child's disordered behavior, and cannot justifiably be regarded as antecedent to that behavior or in any way as causing it.

The finding that some mothers and their children increased the pace of their performance in the drug condition, while others reverted to a slower pace, raises the possibility that certain of the hyperactive children in this study may have differed in the degree to which they are distractible versus impulsive. Results from the Etch-A-Sketch task, and several other tasks in our laboratory on which hyperactive children perform alone, have revealed that some children are easily distracted, slow to respond and frequently inaccurate in their responses when in an unmedicated state, but that these children respond faster and more accurately in the drug condition. Other hyperactive children whose style is to respond impulsively, and therefore often erroneously when off drug, respond more slowly and also more correctly when medicated.

This differential effect that stimulant medication has on the performance style of different hyperactive children suggests that a similar difference in cognitive styles along the impulsivity–distractibility dimension could have existed for the hyperactive children in the present study. This may account for the two contrasting patterns of task completion times observed in the drug condition, but further work is necessary to evaluate this hypothesis.

The differences in performance obtained between Maze I and Maze II that were independent of the drug effect, reflect the difference in the difficulty level of these two mazes. The finding that mothers and their children performed more poorly on Maze II and interacted less well socially, highlights the situational nature of the effect that the children's hyperactivity can have on their ability to interact with others. It is not so much a matter of hyperactive children being unable to cooperate with others in any situation, but more specifically in situations which leave little room for them to behave in an impulsive and distractible manner.

While mothers and their hyperactive children criticized each other more on Maze II, where their ability to cooperate received its most stringent test, no significant differences were noted in the extent to which they praised each other on the two mazes despite the fact that they made fewer errors on Maze I than Maze II. Thus, when considered independent of the effect of drug, this finding casts the nature of their general manner of interacting in a rather negative light. Even though a particular situation may promote better cooperation between them and lead to less criticism on the part of both partners, it may not necessarily result in more praise. The manner in which they typically reinforce each other seems primarily to vary along a continuum of more or less negative feedback with few supportive comments. A general bitterness is suggested, with neither mother nor child being willing to extend a compliment.

Certain of the situation-specific aspects of mother-child interaction were attenuated by an interaction of drug with task. The greater effect that medication had in reducing errors on Maze II, underscores the efficacy of this form of treatment in improving the ability of hyperactive children to cooperate with their mothers, particularly in the type of situation where such cooperation is hardest to achieve. The greater reduction in the amount of criticism given by both partners that also occurred on Maze II in the Drug condition, further testifies to the positive effect of stimulant medication in improving social interaction in a more difficult situation.

Perhaps most interesting is the finding that in the placebo condition very little praise was given by either of the partners, but in the drug condition mothers gave more praise to their children on Maze II than on Maze I. Greater maternal praise occurred on Maze II despite the fact that the mothers and their children were making more errors on this maze than on Maze I. Though the mothers must have recognized that they and their children were making more errors on Maze II, they apparently could not resist applauding the children's improved performance on this more difficult task in the medicated state.

Thus, the mothers appeared to give credit where they felt it was most deserved, rather than allowing their children's improved performance on medication to become an excuse for rewarding them no matter what the situation. The benefit of this to the hyperactive child could be to emphasize the value of continuing to exert a "good effort" over and above any positive effects on his performance that might accrue directly from stimulant therapy. Ultimately, a benefit of stimulant medication to the hyperactive child may be the opportunity that it creates for him to profit from this type of learning, which he might not otherwise be exposed to due to his inattentiveness and disruptive behavior.

SUMMARY

Twenty-six hyperactive children and their mothers collaborated on a contour tracking task with acute administration of stimulant (methylphenidate) and placebo

in a double-blind design. The dyad performed significantly better when the child was in the medicated state. Aspects of the quality and quantity of interaction between mother and child were noted. In the medicated state, the child directed the mother more and in a more positive fashion, while the mother behaved in a less controlling way and also more positively. We conclude that in the medicated state, a more favorable interaction is established, permitting less constrained learning on the part of the child. The findings make it unlikely that the controlling behavior of mothers of hyperactive children is anything other than a response to the way their children act.

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DELETERIOUS EFFECTS OF CHRONIC UNDER-NUTRITION ON COGNITIVE ABILITIES

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There are numerous studies reported in the literature concerning the effects of malnutrition on various aspects of the psychological development of young children (Scrimshaw and Gordon, 1968; Hertzig *et al.*, 1972; Cravioto *et al.*, 1966; Werner and Muralidharan, 1970; Klein *et al.*, 1971).

At a symposium in 1973 sponsored by the Swedish Nutrition Foundation, it was concluded that "in spite of the widely-held and widely-publicized opinion that malnutrition in early life jeopardizes mental development, the evidence to support this opinion—especially that from studies conducted in man—is scanty. . . . There is practically no evidence of a relationship between the much commoner mild and moderate forms of malnutrition and mental retardation" (WHO, 1974). While Monckerberg *et al.* (1972), found significant differences in intelligence between lower socio-economic group children separated on the basis of nutritional level (i.e. good nutritional status and normal growth as compared to poor nutritional growth status), these differences were not attributed to malnutritional factors alone, but to a variety of cultural, educational and socio-economic factors.

The present investigation was an attempt to investigate a variety of cognitive abilities of lower socio-economic Nigerian children. In an attempt to isolate the role that malnutrition may play as one of the many variables known to be associated with retarded intellectual development, this group was separated into those who were poorly nourished and those who were reasonbly nourished. Because black children are generally reported to perform very differently from Caucasians on a variety of psychological tests (Dreger and Miller, 1968; Jensen, 1973; Yule *et al.*, 1975), it was considered desirable to include a sample of black children who had had adequate nutrition and opportunity for development of cognitive abilities from infancy to serve as a control group.

METHODS

Subjects

The subjects were 118 black children between the ages of 2½ and 6 yr who came from "well-to-do" urban and "poor" urban and rural environments. Criteria for inclusion in the well-to-do group were

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that the children's nutrition and opportunities for stimulation of cognitive development should be airly representative of a wide range of social classes. Forty-five children were selected from a private nursery school and from private families in Ibadan. [This well-nourished, well-stimulated group of children (WN) served as a control.] To obtain a representative sample of all social classes, selection included eight children of professional parents, 28 children whose parents were clerks, soldiers, policeman, tailors, etc., and nine adopted children whose parents, if known, were unskilled or semi-skilled. Four of the latter group were abandoned children.

Twenty-eight children ("Oje urban poor" group) were selected from the total "Oje" sample of the ongoing growth study in progress at the Institute of Child Health, University of Ibadan (see below).

Forty-five children ("Ilora rural poor") were selected from the environment of a Health Centre located 35 miles from Ibadan at a village, Ilora. Criterion for selection was that the child should have a known birth date. The life style and physical living conditions of these two "poor" groups were similar except that the rural people were farmers whereas the urban people were mainly traders.

The "Oje" urban and Ilora rural "poor" children were sub-divided according to their nutritional status, as judged by their height and weight measurements into:

(a) those who fell above the local "Elite" standard mean −2 s.d. for height and/or weight [the Reasonably Nourished (RN), $n = 28$].

(b) those who fell below the local "Elite" standard mean −2 s.d. for height and/or weight [Malnourished (MAL) $n = 45$].

The ages, sex and locality of the children are summarized in Table 1. Figures 1 and 2 show the range of height values for the boys and girls of the three different groups. Weight values tended to fall in the same pattern and are omitted here.

TABLE 1. DISTRIBUTION OF 118 SUBJECTS BY SOCIO-ECONOMIC GROUP, AGE, SET AND LOCALITY AND GCI SCORES

	2 & 3 yr		4 yr		5 yr		6 yr		Total	
	M	F	M	F	M	F	M	F		
"Well-to-Do" Urban Well-Nourished	7	5	7	4	9	4	4	5		45
"Poor" "Oje" Urban										
Reasonably Nourished	4	5	3	2	1	1	—	—	16	
"Oje" Malnourished	6	2	4	—	—	—	—	—	12	
Totals	10	7	7	2	1	1	—	—		28
"Poor" "Ilora" Rural										
Reasonably Nourished	1	1	2	1	5	2	—	—	12	
"Ilora" Malnourished	4	4	9	8	4	4	—	—	33	
Totals	5	5	11	9	9	6	—	—		45

Assessment of nutritional levels

It is a fair assumption that an individual whose physical growth is normal for his age, i.e. whose height and weight are within the mean ± 2 s.d. of an appropriate standard, has had adequate nutrition and medical care during his life. The height and weight of the children in the study were measured and compared with the local ethnic "Elite" and lower or "poor" socio-economic level standards. These standards were obtained from mixed longitudinal data collected between 1962 and 1970 on two groups of Nigerian Yoruba children (Janes, 1973). The "Elite" group (total number of 422) comprises children from well-to-do, mostly professional families in Ibadan. The poorer group "Oje" children (total number of 477) are from traditional, often polygynous households from a market area called "Oje" in the old part of Ibadan. The people live in tin-roofed, mud-walled houses

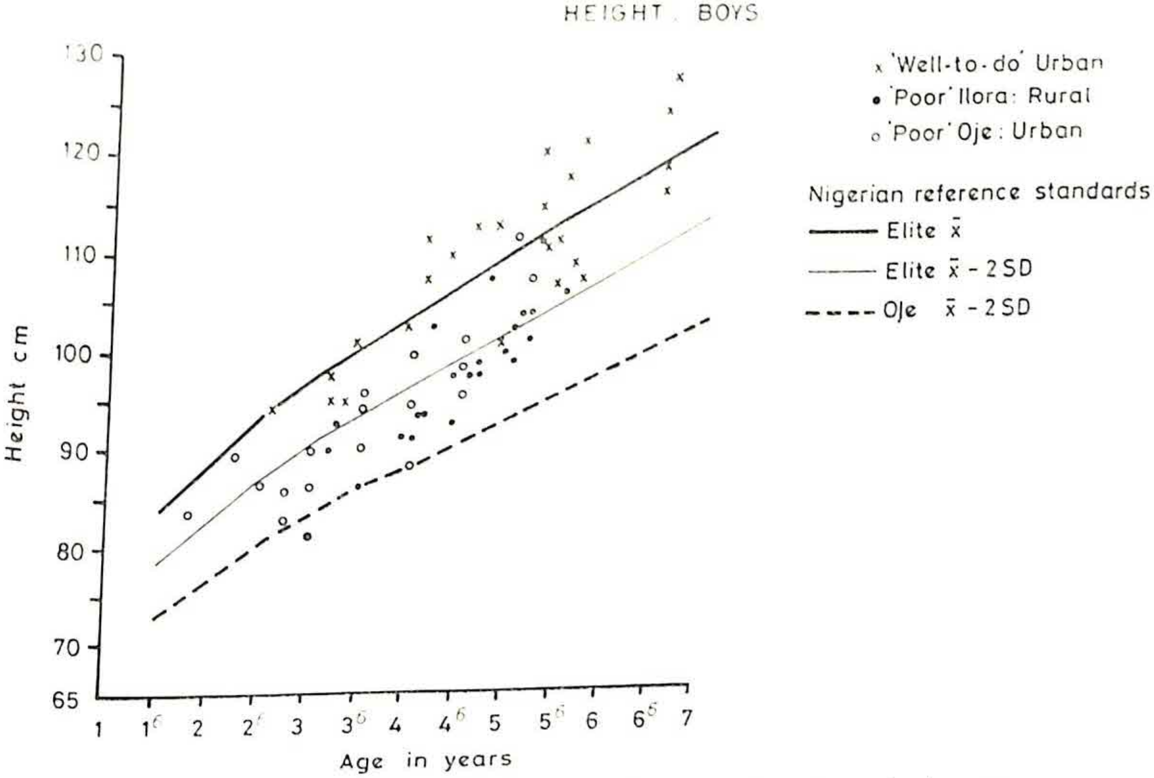

Fig. 1. Height of subjects (boys) plotted on Nigerian reference standard curves.

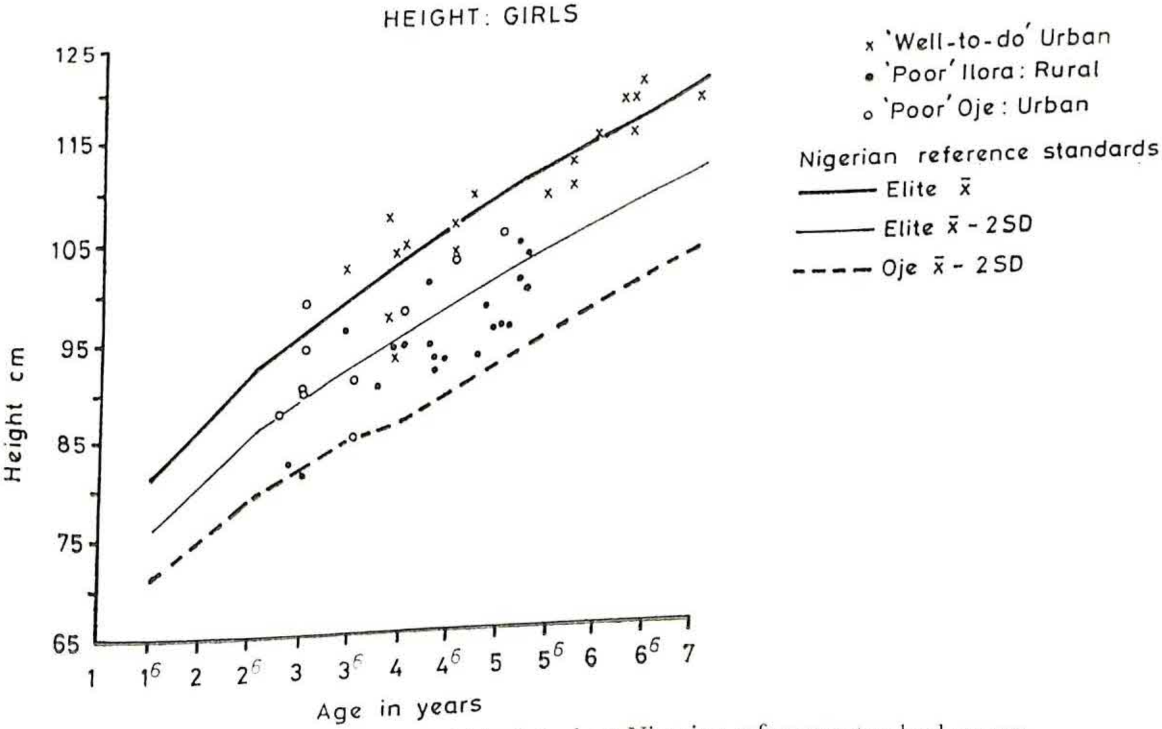

Fig. 2. Height of subjects (girls) plotted on Nigerian reference standard curves.

in large compounds. There is no sewage system and water is obtained from a few communal water taps. The parents have very little education and are very poor on the whole.

For the parameter of height, the "Elite" mean and "Elite" mean −2 s.d. are very similar to the British 50th and 10th centile respectively (Tanner *et al.*, 1966). The mean of the "Oje" group (main on-going sample) is also very similar to the "Elite" mean −2 s.d. It was thought reasonable, if slightly arbitrary, to use the latter to distinguish between those who were reasonably nourished (RN) and those who were malnourished (MAL).

Assessment of cognitive functioning

The McCarthy Scale of Children's Abilities was administered to each child. The scale had been translated into Yoruba, and if the child was more fluent in Yoruba than in English, it was administered in Yoruba. All urban and rural poor were tested in the presence of their mothers, and were given a small snack prior to testing both in the rural Health Centre and the Institute of Child Health. The children from the higher socio-economic background were tested at school or in their homes.

Table 2 presents the mean scores obtained on the GCI by age group, the standard deviations and the F values for the analyses of variance. The WN 5 and 6 yr olds scored higher than their younger peers, though not from one another. The RN 4 yr olds were lower than their peers, while the MAL 4 and 5 yr olds were poorer than the 3 yr olds.

TABLE 2. MEANS, STANDARD DEVIATIONS AND F VALUES OF GCI SCORES FOR 118 SUBJECTS BY AGE AND NOURISHMENT LEVEL

	2 & 3 yr	4 yr	5 yr	6 yr	
"Well-Nourished"	$n = 12$	$n = 11$	$n = 13$	$n = 9$	
GCI	105·42	101·09	111·38	120·22	19·36*
SD	10·39	11·24	17·20	19·74	
"Reasonably Nourished"	$n = 11$	$n = 8$	$n = 9$		
GCI	95·50	81·85	93·72		5·41†
SD	2·44	8·66	12·08		
"Poorly Nourished"	$n = 16$	$n = 21$	$n = 18$		
GCI	91·58	74·76	75·92		6·86†
SD	15·49	15·77	6·63		

* *P* 0·01. † *P* 0·05.

RESULTS AND DISCUSSION

All comparisons of the GCI and each of the sub-scales showed significant differences between the three groups. The mean scores obtained, the standard deviations and the F values of the analyses of variance are presented in Table 3.

TABLE 3. MEAN SCORES, STANDARD DEVIATIONS AND F VALUES FOR 118 WELL-NOURISHED, REASONABLY NOURISHED AND MALNOURISHED CHILDREN ON THE GCI AND SUB-SCALES OF THE MCCARTHY SCALE OF CHILDREN'S ABILITIES

	Well-Nourished		Reasonably Nourished		Malnourished		F-Ratio
Scale	M	SD	M	SD	M	SD	(2, 115)
G.C.I.	109	16·1	91·4	11·2	79·6	14·6	45·7*
Verbal	52·8	8·3	46·9	8·5	40·3	8·0	25·2*
Perceptual	55·1	11·0	42·0	6·9	36·4	8·0	48·9*
Quantitative	54·9	9·8	43·3	8·3	38·1	9·3	37·2*
Memory	56·6	9·0	46·6	6·2	42·7	7·3	36·3*
Motor	61·1	9·6	48·1	8·9	41·3	9·0	51·7*

$^{*}P < 0{\cdot}01$.

To clarify further the specific variables which might differentiate the groups, scores obtained on the sub-tests were analysed. To compare groups, irrespective of age differences, the individual scores on each sub-test were expressed in terms of deviations from the mean of the American standardization sample for each age group. The results of the analyses are shown in Table 4. (No analysis was carried out for the R–L orientation sub-test as the numbers were too small for the RN group.) The significant differences obtained on each scale between the RN and the MAL children, despite their similar environment, would indicate that nutritive levels do affect the performance of children. The differences obtained are almost identical to the decrements in performance of lower income group children, relative to higher income group children reported by Monckeberg *et al.* (1972). Sub-test analysis is of interest to evaluate the extent to which experience is the variable involved in these differences and the clinical significance of those sub-tests which do not necessarily reflect experimential variables.

Well-nourished and reasonably nourished performance differences

When one observed the scarcity of opportunity that children in the lower socio-economic groups have for object-manipulation and play, it is evident that some sub-tests of the McCarthy Scale rely to a certain extent on experience. The low performance of the RN group on sub-tests such as Puzzle-solving and Draw-a-Design, Draw-a-Person, relative to the WN group, could reflect this lack of experience. These tests were administered to reveal the extent to which lack of opportunity may effect skills which are generally considered desirable to scholastic achievement.

However, on some sub-tests there were differences between the WN and the RN in which it is not likely that experience was a critical variable, i.e. Tapping Sequence, Verbal Memory I, Numerical Memory I and II, Leg and Arm Co-ordination. Interestingly, the differences obtained by the RNs on some of these sub-tests did not deviate considerably from the American standardization sample; it is only relative to the WN group that these differences take on significance. While it is possible that the observed sub-optimal performance of the RN group on sub-tests as Tapping, Memory, Counting and Sorting, Leg and Arm Co-ordination, reflect a lesser ability to attend, concentrate and reproduce, it may merely reflect the greater opportunities that the WN children have been afforded. (The 5 and 6 yr olds of the WN group did score significantly higher than the 3 and 4 yr olds of the same group.)

Reasonably nourished and malnourished performance differences

Considering that these children come from the same environment the differences that occur on the sub-tests are highly likely to be a function of the poor nourishment of the MAL group. These children performed more poorly than their counterparts on tests of abstract reasoning, logical and relational thinking (i.e. Conceptual Grouping, Counting and Sorting; Word Knowledge) and on tests requiring perceptuo-performance accuracy (i.e. Tapping Sequence, Draw-a-Child, Leg and Arm Co-ordination and Memory). They were also less verbally fluent, that is, less able to classify and think categorically. When comparisons were made with WN

TABLE 4. MEAN DEVIATION SCORES, STANDARD DEVIATIONS, AND F VALUES FOR WELL-NOURISHED, REASONABLY AND MALNOURISHED CHILDREN ON SUB-TESTS OF THE McCARTHY SCALE OF CHILDREN'S ABILITIES

Test*	Well-Nourished (n = 45)		Reasonably Nourished (n = 28)		Malnourished (n = 45)		F-ratio (2, 115)
	M	SD	M	SD	M	SD	
Block Building	0·13	0·90	−0·22	1·81	−1·57	2·23	11·5*
	*WvR						
Puzzle Solving	0·27	5·10	−3·15	2·57	−4·17	2·32	17·2*
Pictorial Memory	0·40	1·47	0·54	1·37	−0·50	1·51	5·8*
			†RvM				
Word Knowledge	−0·07	2·40	1·02	3·89	−3·95	4·90	11·7*
Number Questions	0·17	1·45	−0·91	1·46	−1·19	1·23	11·7*
	*WvR		†RvM				
Tapping Sequence	0·22	1·59	−0·98	0·79	−1·66	1·16	24·4*
	*WvR		†RvM				
Verbal Memory I	3·66	5·38	−1·30	4·64	−2·77	4·54	20·3*
Verbal Memory II	−0·04	2·96	0·03	1·68	−0·35	2·00	0·3
	†WvR		*RvM				
Leg Co-ordination	2·02	1·53	0·43	2·11	−0·88	1·74	29·8*
	*WvM	†WvR	†RvM				
Arm Co-ordination	2·14	3·17	3·34	2·90	−0·21	0·83	19·6*
Imitative Action	−0·01	0·67	0·47	0·44	−0·21	0·83	8·4*
	*WvR						
Draw-a-Design	3·18	3·22	−2·00	1·82	−1·68	1·71	57·6*
			RvM				
Draw-a-Child	1·28	3·21	−3·58	3·57	−5·30	3·43	43·7*
	*WvR						
Numerical Memory I	3·16	1·59	−0·88	1·15	−1·11	1·17	31·7*
Numerical Memory II	0·07	1·60	−0·57	0·51	−0·28	0·78	2·9
	*WvR		RvM				
Verbal Fluency	3·50	5·45	−0·14	4·26	−2·36	4·05	17·5*
	*WvM		*RvM				
Counting and Sorting	−0·05	2·23	0·06	2·27	−2·29	2·64	12·3*
Opposite Analogies	−1·00	1·78	−1·18	1·91	−1·80	1·36	2·6
			†RvM				
Conceptual Grouping	−0·38	2·68	0·53	2·29	−1·42	2·01	6·0*

*Significance levels between groups found to differ on the Duncan's Multiple Range Test for various tests are shown throughout table.

*P 0·01. †P 0·05.

group these children scored lower on 15 of the 19 sub-tests. Most of these differences were highly significant.

Such impaired functioning on most sub-tests by the MAL group, relative both to their counterparts and to the normal control, could suggest central nervous system pathology. It should be noted that the MAL group were differentiated from the WN group on 9 of the 12 sub-tests of the McCarthy Scale reported by Kaufman (1972) to differentiate from a control group children suffering from minimal brain damage, and from the RN by 4 of these sub-tests. It was noted in subsequent play-group activities, carried out following this testing, that the children of the MAL groups showed marked awkwardness and rigidity in motor activities. This was in sharp contrast to the litheness displayed by the WN group.

Well-nourished group

The results obtained in the present study of the well-nourished and stimulated children do not support findings by other investigators (Yule *et al.*, 1975; Jensen, 1973; Kaufman, 1973; Shuey, 1966) of the generally lower performance of American and English black children, in contrast to the indigenous white populations, on tests purporting to measure intelligence. The WN children in this sample differed considerably, of course, from the black children studied in Western countries, in that they have not been part of a discriminated-against minority group, frequently impoverished. While the WN group in the present study may not have had all of the educational advantage from birth onward of white children from similar backgrounds, they have not had to face possible social rejection from the community.

The results obtained in this group are consistent with findings reported by other investigators on higher socio-economic Yoruba children, using a slightly adopted Yoruba version of the Stanford–Binet test (Lloyd, 1971; Janes, 1975, citing Durojaiye).

On several tests it was noted that the WN children deviated markedly from the American standardization sample. On memory tests these children scored higher than American children; a finding also obtained with American black children (Jensen, 1969). The WN children also performed considerably above the mean on the Draw-a-Design and Verbal Fluency sub-tests.

Contrary to other investigations (Jensen, 1969) the children in the WN group deviated very little from the American mean on other sub-tests, some of which involved abstract abilities. The question arises as to why these children did not perform equally on all tests relative to their own performance. One possibility may be that the traditional authoritarian structure of both the home and school, which still prevails in some well-to-do households, does not provide the child with the appropriate experiences to develop all abilities equally. Children are frequently not permitted to enter into discussion with elders (even those who are only a few years senior to them), nor are questions always encouraged. Another possibility is that there is little opportunity for child-educational play of the type that develops problem-solving and reasoning skills, children frequently being left in the care of illiterate housemaids.

It is of interest to note that a portion of the WN group who had not been exposed to an unduly authoritarian environment, and had had ample opportunity for educational play from 2 onwards performed in a fairly even manner on most sub-scales. These were the adopted children who were, in all cases, adopted into the homes of professionals. Despite the fact that some of these children had experienced extreme privation in their infancy, over periods ranging from a few weeks to 23 months, the mean scores obtained by this small group on the sub-scales of the McCarthy were 52, 52·4, 49·3, 49 and 52 on the Verbal, Perceptual Performance, Quantitative, Memory and Motor Scales, respectively. On the Conceptual Grouping and Opposite Analagies sub-tests, both tests of abstract ability, they obtained mean-deviation scores of 0·92 and 0·90, respectively, above the American standardization sample. There would be no reason to believe that these children have any greater genetic potential for abstract reasoning than the remainder of the WN group who, relative to their memory scores, scored only in the average range. In fact, the Memory Scale of this adopted group appears to be a fairly accurate, even if somewhat low, predictor of their overall performance.

In summary, there appears to be little doubt that the impoverished environment of the children in this study has been responsible for their sub-optimal performance, in contrast to that of their better-off peers. The children who were most malnourished, as judged by their physical growth status, performed most poorly on cognitive measures. There seems little doubt that poor nutrition is a most important variable affecting cognitive development, although at this time it is impossible to assess its precise contribution. While it might be possible to plan a definitive study on the effect of cognitive stimulation across groups of all nutritive levels, we feel that, at this time, priorities for allocation of monies and personnel should involve systematic investigation of intervention to improve the total environment, i.e. nutrition, sanitation, cognitive stimulation, etc.

SUMMARY

The McCarthy Scale of Abilities was administered to 118 Nigerian children between the ages of 2½ and 6 yr who came from "well-to-do" urban and "poor" urban and rural environments. The "poor" groups were sub-divided into the "Reasonably Nourished" and the "Malnourished" on the basis of their physical growth status. The "well-to-do" group served as the "Well-Nourished" control.

The "Well-Nourished" group scored significantly higher than the "Reasonably Nourished", the latter significantly higher than the "Malnourished", on the G.C.I. and all sub-scales. It was felt that future remedial measures should try to improve hygiene, sanitation and cognitive stimulation as well as nutrition in "poor" groups.

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The East End of London, a celebrated working class area, is in the process of considerable change. Willmott and Young (1957) have described the decrease in population by the migration of nuclear families to the new satellite towns and estates of London since the war. The resultant breakdown of traditional kinship ties produced stressful changes in family patterns. Predictably, these stresses are paralleled by lower birth rates and higher illegitimacy and infant mortality rates in relation to the national average (Watton, 1972). In addition to the demographic data about the area, there is a complementary literature about the community ethos. Searle (1972) has suggested that "There is a basic hostility to authority in most people living in the East End. The children and their parents know where the power lies . . . the children know particularly, because they are right on the end of it." The characteristics of this population should only serve to aggravate the problems for professionals examined in this study, since family intervention and other psychiatric approaches tend to be designed for a middle class clientele. The families in this study had been referred to the London Hospital Child Psychiatry Clinic, part of a teaching hospital department of psychiatry, closely linked to the paediatric department. It is one of six child guidance clinics serving the borough, but as a teaching hospital clinic it also accepts referrals from outside the area.

METHOD

The sample

Twenty-five families were selected from the clinic's new referrals, and interviewed at the rate of two per week. Eligible referrals were defined by the following criteria: (1) no clinic contact in the past 6 months, (2) domicile in a specified area about the hospital (predefined on the basis of accessibility for home or clinic visit). Random numbers could not be used for sample selection because the clinic did not keep a long waiting list, and the flow of new referrals was unpredictable (varying from two to six per week). New patients were normally allocated to clinic staff at a weekly meeting and appointments then mailed. A research appointment letter was included with the clinic appointment for the first two new referrals considered at the meeting who fulfilled the criteria. There was no known alphabetical, or other, bias involved in this procedure. Two-thirds of referrals meeting the criteria during the period of the survey were included in the sample. Only one selected patient was excluded: a paranoid mother known to the social worker, in whom interview might have produced complications for future treatment.

The interview

The research appointment letter requested the presence of both parents at home in the evening to participate in a survey of parental ideas about the child psychiatry service. They were interviewed prior to clinic assessment to ascertain their attitude unbiassed by their experience of a particular assessment by a particular psychiatrist. The interviews were conducted at home in the evening to facilitate the father's presence.

The interview schedule was constructed from the hypotheses described; a proforma is appended. A pilot study of six interviews produced some rearrangement but no substantial change. A semi-structured interview seemed most appropriate to this complex subject (Moser, 1971). Interviewer bias was consistent to the extent that the author conducted all interviews. The schedule produced three types of data: (1) demography, (2) questions producing positive/negative answers (e.g. Q. 17), (3) open questions, which could be partially quantified by counting the number of responses (e.g. Q. 15).

At the parents' home the researcher explained the purpose of the research, to understand their needs more fully and improve our service. The identities of the interviewer and the psychiatrist they would see at the clinic were clarified. The author explained the form of the interview and the need for answers from both father and mother. It was emphasized that the child or family problems were to be dealt with later at the clinic assessment. Queries raised by the interview would be discussed after administration of the schedule. The presence or absence of children was left to the parents. The whole visit averaged 45 minutes.

Participation in the research and clinic assessment provided hard data for comparison with expressed attitudes. Diagnosis provided by assessing psychiatrists proved unfit for study: in the comparison group a wide variety of theoretical models was used; the classification of the index group failed to distinguish between neurotic and anti-social children due to a tendency to label anti-social behaviour as "neurotic" on the basis of psychodynamic formulations. No children in either group were considered psychotic.

RESULTS

All index mothers and all but one father participated in the research interview though a few fathers were late. The missing father had not been informed of the occasion by his wife. This provides some behavioural data consistent with the first three hypotheses. Parents seemed to relax and enjoy the interview once explanations were given. Children played about the room and cups of tea were routinely provided. The interview frequently led to queries about the families' role in the child's disturbance and the need for the fathers' participation. Fathers were told they would be welcome at the assessment, but that this was not currently a clinic policy or condition. Parents often attempted to initiate assessment and therapy but the interviewer persuaded them to await the clinic visit for exploration of their problems. In fact the interview schedule seemed an excellent tool for arousing interest in family therapy.

TABLE 1. CHARACTERISTICS OF INDEX AND CONTROL FAMILIES

	Index	Comparison
Total no. of families	25	50
Social class	II. III. IV. V. 3 13 6 3	Not known
Referral source		
G.P.	15 (60%)	25 (50%)
Paed.	5 (20%)	14 (28%)
School	2 (8%)	6 (12%)
Court	1 (4%)	2 (4%)
Other	2	3
Immigrants	6 (24%)	8 (16%)
Divorced mothers	2 (8%)	4 (8%)
Step-parents	1 Step-mother (4%)	2 Step-fathers (4%)
Child's sex	7F (28%) 18M (72%)	18F (36%) 32M (64%)
Child attended Clinic appointment	23 (92%)	37 (74%)
Fa. attended clinic appt.*	10/23 (43·5%)	3/46 (6·5%)

*Chi Square (11·385) 1 df, $P < 0.001$.

Table 1 shows the index and comparison groups to be comparable in terms of source of referral, sex distribution, and rates of immigration and divorce. The research visit produced improvement in subsequent clinic attendance particularly by fathers. It is noteworthy that index family attendance conformed exactly with the intentions stated at interview (Q. 10), whether or not they favoured family assessment. This provides further behavioural data to support the predictive value of the attitudinal findings.

TABLE 2. THE RELATIONSHIP BETWEEN PREPAREDNESS FOR FAMILY ASSESSMENT AND OTHER VARIABLES

	Positive group (prepared to be seen as a family)	Negative group (unprepared to be seen as a family)
Total no. (both parents agree)	20	5
Social class II	3	—
III	11	2
IV	5	1
V	1	2
Referral—Self	2	0
Self & G.P.	11	1
G.P.	1	2
Paed.	3	2
Police	1	0
School	2	0
Mean No. of reasons in favour of family assessment per family*	2·75	0·8
Mean No. of reasons against family assessment per family*	0·7	1·8
Child attended clinic appt.†	20	3
Father attended clinic appt.	10/19	0/4

*Chi square (12·28) 1 df $P < 0{\cdot}001$.
†Fisher's test $P < 0{\cdot}05$.

Table 2 provides most of the data relevant to the first hypothesis. Eighty per cent of fathers and all but one mother were prepared to participate in family assessment. Their actual performance is consistent with their attitudes: all the mothers and half the fathers of the positive group attended the clinic versus only 60% of mothers and no fathers from the negative group. This underlines the fact that it was the fathers who were most reluctant to participate, contrary to the wish of their wives. Both attitude and performance are consistent with the number of reasons offered in favour (Q. 15) and against (Q. 16) family attendance suggesting cognitive support for their attitudes. There is a tendency for positive parents to be of higher social class, to less often have anti-social children and to initiate referral themselves, though numbers are insufficient for statistical analysis. This table clarifies the origin of referrals. Twelve of the 15 parents referred by general practitioners had gone to the family doctor purely to obtain a formal letter to the child psychiatrist. Furthermore, mothers managed the referral process in over 75% of families (Q. 8).

Fifty-five per cent of positive parents said (in answer to Q. 18) they would spontaneously exclude siblings from family interviews (to protect them), unless specifically requested to bring them. Eighty per cent of negative families would spontaneously include the whole family. Thus their concept of relevant family does not account for parents' attitudes to family assessment.

TABLE 3. ATTITUDE TO HOME VISITS AND OUT-OF-HOURS APPOINTMENTS

Sample size	25
Prefer home visit	92%
Dislike home visit	8%
No. for whom home visit essential for family assessment	32%
No. for whom out-of-hours essential	24%

Table 3 provides data relevant to the second and third hypothesis. Over 90% of fathers and mothers prefer home visits though only one third regard it as an essential requirement for seeing the whole family. The preference for home visit related to feelings such as "we feel relaxed and can really talk at home" and "you can see us as we really are". Convenience was not the issue and in fact the two families who disliked home visits were negative to family assessment in any setting. Evening appointments were required by one quarter of parents for family assessment and most of these would also require home visiting.

TABLE 4. EFFECT OF PREVIOUS CONTACTS ON ATTITUDES TO FAMILY ASSESSMENT

	Positive group ($N = 20$)	Negative group ($N = 5$)	Totals	Unsatisfactory experience in past
Previous psychiatric contact:				
Initiated for Father	1	0	1	—
Mother	2	2	4	2
Child	9	1	10	3
Previous social work contact	13	2	15	5

Table 4 shows a surprisingly high number of prior contacts with psychiatrists and social workers. Previous experience with psychiatry did not seem a major variable in determining interest in family assessment unless it was grossly unsatisfactory. This applied to two mothers who had, themselves, undergone compulsory adult psychiatric assessment without treatment or follow-up. They remained hostile to any form of psychiatric contact for their children or themselves and accounted for the only two children of the index group who failed to attend the clinic.

In Table 5 parents' explanations to the index child about the child psychiatry appointment are classified into three groups. "Explanation" means that the parents gave specific information beyond telling the child of a visit to "a doctor". Sixty-

TABLE 5. INFORMATION GIVEN TO THE CHILD ABOUT THE PSYCHIATRIC APPOINTMENT

"No information"	"To see Dr."	"Explanation"
2	14	9

four per cent of the children had been given no concept of the nature of a psychiatric assessment. Parents offered two main reasons for this failure: either they did not know enough about what psychiatrists did, or, they were afraid the child would embarrass them by telling the neighbours. This latter fear is consistent with the finding that while parents discuss child management with friends they keep secret visits to psychiatrists (Q. 13). This indicates the stigma surrounding contact with psychiatrists. Interestingly, parents tended to address the interviewer as "Mister" in their homes.

DISCUSSION

Questions of accuracy and replicability arise in studies of attitudes and need to be dealt with before the implications of the results are examined. Two tests of the degree to which parents' actual behaviour conformed with their attitudes are inherent in the design of the study. First, the research interview involved both parents seeing a psychiatrist at home in the evening. Participation in itself served as partial behavioural test of hypotheses being examined. Second, subsequent clinic attendance conformed precisely with that predicted in the interview. That parents did what they predicted in these respects, suggests that their other predictions might hold true.

The first hypothesis, that parents will accept family assessment is supported by three findings. Eighty per cent of sample parents said they would be seen as a family, and provided a significant number of reasons in favour of their attitude (Table 2). Third, their behaviour was consistent with these attitudes: all parents except one father participated in the research interview and their subsequent clinic attendance improved significantly over the comparison group (Table 1). We are left to examine why the research interview produced these effects. There are three possibilities: the researcher himself, the content, or the fact that there was a research interview with both parents in the setting of their own home in the evening. The setting is considered specifically later.

The researcher was an experienced therapist and his Australian accent freed him of some class barriers. This does not explain the presence of the parents from the outset of the research interview. Nor is it likely to account for the improved clinic attendance since most patients were told they would be seeing another psychiatrist at the clinic. Furthermore, a semistructured 30 minute interview limits the exhibition of the key therapeutic skills described by Traux and Carkhuff (1967). Similarly, the content of the interview seems insufficient to explain the findings, particularly in that the interviewer avoided discussion of the childs' problems.

The research interview itself seems the major factor producing this degree of parental cooperation. It may have overcome some of the obstacles to client participation described by Mayer and Timms (1970). They argue that clients and workers often differ in judgement and perceptions: clients may perceive workers as "not interested" or "failing to understand them". Mayer and Timms (1970) propose that "working class clients are not introspectively inclined and expect the worker to play an active part in solving their problem". The interview schedule demonstrated interest and the home visit activity. This congruence provides one explanation of the effects of this study.

The second hypothesis that home visits are required for family contact is only partially supported. Only one third of parents regarded home visits as an essential condition of family assessment (Table 3). In subsequent clinic practice, the majority of fathers have attended in response to specific invitation. This suggests that the major obstacle to fathers' attendance is simply that, in this community, attendance at children's doctors is seen as part of the maternal nurturing role. Explicit invitations will often counteract this. However, 92% of parents said they preferred home visits and virtually all cooperated with the research in that setting (Table 3). These findings are consistent with the researcher's subjective impression that families were more relaxed in their homes. Barnes (1973) and Friedman (1965) describe similar advantages of more contact with fathers and lower attrition rates. The preference might arise out of diminished fear of the stigma of psychiatric contact. A further explanation might be derived from Bowlby (1973). His thesis, that fears of strangers and strange environments are natural phenomena which normally resolve but which "neurotics" retain, could explain the preference for the familiar in the often neurotic parents of disturbed children.

The third hypothesis is less well supported. Only 24% of families regarded out of hours appointments as an essential requirement for family assessment. Most of these parents required home visiting as well (Table 3). It may be noted that this percentage matches the proportion of the comparison group who failed to keep their initial clinic appointment (Table 1). In contrast, all index families were seen at home out of hours and 92% at the subsequent clinic assessment.

These findings suggest that most of those families who fail to attend clinic appointments will participate in home contact, after hours. Alternative approaches to this problem are relatively cumbersome. Jacobs' (1972) plan of education of parents prior to seeing the psychiatrist still requires them to attend the clinic in the first place. Cartwright (1972) in his study of services for maladjusted children also demonstrated the need to fit clinics to parents' definition of acceptable service. He suggested child psychiatry "change its guise to counselling" and "work in an educational setting". Home visits to those who fail to attend a clinic may provide a simple alternative.

The fourth hypothesis cannot be properly explored since the small number rejecting family assessment precludes statistical analysis (Table 2). However, the table does suggest that general practitioners had not performed a diagnostic role for index families. Rather they simply wrote formal referrals at the parents' request. This practice may be questioned though the study does not indicate whether family doctors perform a filter function and treat a proportion of those requesting child psychiatry assessment themselves.

The high frequency of previous contacts with psychiatric workers (Table 4) shows that this sample was not a selected healthy middle-class group. The number of mothers who had had previous treatment is similar to Wolff's (1968) Edinburgh sample. This suggests the findings may be relevant to similar working class communities. Previous experience with psychiatric workers had not informed parents of two important issues. The failure of the majority of parents to explain to their children the nature and purpose of the visit to the child psychiatrist augurs ill for the child's capacity to participate fully in the assessment (Table 5). Furthermore, just as fathers need specific invitations, so do siblings, or half the families will exclude them. Clinics might consider education of referring agents and phone contact with referred familes as relevant strategies to deal with these recurring problems.

Professionals often perceive incompatibilities between their sophisticated models and their patients' expectations and capacities. The problem may inhere not in the complexity of the theory, but in a failure to appreciate in detail, the perceptions and attitudes of parents. Procedures may be developed without extensive public education or resiting of clinics. The attitudinal and behavioural data in this study suggest that the majority of parents will cooperate in family assessment if specifically invited. Most of those who fail to attend a clinic may cooperate in their home setting, out of working hours.

SUMMARY

Although family assessment is widely regarded as an important aspect of child psychiatry practice, psychiatrists often doubt parents' readiness to participate. The attitudinal and behavioural data in this study suggest that the majority of parents will participate in family assessment if specifically invited. Most of those who fail to attend a clinic may cooperate in their home setting, out of working hours.

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APPENDIX

Parent Attitude Schedule

(Answers obtained from both father and mother in each other's presence)

1–4. Name, Address, Age, Occupation.
5. Who lives here?
6. Children—No., Age, Adoption?
7. Who first had the idea of your coming to the clinic?
Fa/Mo/G.P./School/Police/Other.
8. Who got the referral note from the G.P.?
Did not get one.
Yes. Fa/Mo/Other.
9. What did you think and feel when Dr. .... referred you to Child Psychiatry?
10. Who is to come to the Clinic appointment?
11. Have you had any help from other psychiatric clinics?
12. Have you seen Social Workers?
13. Has anyone you know well had help with their children?
14. If we asked you to be seen as a *Family* what would you think/feel about it?
15. What advantages can you see in coming as a family?
16. What difficulties can you see in coming as a family?
17. Would you be prepared to be seen as a family?
18. Who would you have in a family interview?
Fa/Mo/Index Child/Other Sibs/Others.
19. How do you feel about clinic people coming to see your family at home?
20. Would they *have* to come to your home for a family interview?
21. How do you feel about clinics seeing families outside 9–5, the usual working hours?
22. Would they *have* to do this to see your family?
23. What sort of help would you like from the clinic?
24. What sort of help do you think the clinic will in fact give you?
25. What have you told your child about the appointment at the clinic?
Nothing/to see a Dr./Explanation.

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THE INTERCORRELATION OF MEASURES OF SEX-ROLE IDENTITY

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STUDIES of preschool children's sex-role identity are plagued with the problem of choosing appropriate measures. It is particularly difficult to satisfy requirements for validity. For example, several researchers have intercorrelated performance on a measure of preference (asking a child to indicate or name the toys and friends s/he would most like to play with) and a measure of adoption of sex-roles (actual behavior). Their results have shown that no relationship exists between the two types of instruments, or, that a relationship exists for some subgroup of the sample (defined by age, sex, or social class), but not for all subgroups (Biller, 1969; Borstelmann, 1961; Fling and Manosevitz, 1972; Sears *et al.*, 1965; Thompson and McCandless, 1970; Ward, 1968). The present study examines the degree to which children's performance on any of seven widely used measures of sex-role identity correlates with their performance on any other measure.

METHOD

Subjects

One hundred and twenty-two children from two small cities served as subjects for this study; 60 children (39 male, 21 female) were from Middletown, CT, and 62 children (36 male, 26 female) were from Avignon, France. The age range for the American sample was 3 years 0 months (3·0–4·8), and for the French sample 2·6–5·6. In each city the majority of the children were Caucasian (three American children were from minority groups, and three French children), and the area in which they lived was predominantly middle class.

Measures

Toy Preference Test. In each of seven trials the second author presented each child with three pictures of toys, one masculine, one feminine, one neuter, and asked the child to point to the one s/he liked best. All children saw the same pairings of toys in the same order of presentation. The toys were selected by a procedure similar to that first used by Fauls and Smith (1956), that is, 17 adults (nine women and eight men) from each city were asked to rate 30 pictures of toys pasted on 3 × 5 cards. The seven toys most frequently judged masculine, feminine and neuter were selected for the test. Over 90% of the adults agreed on each categorization.

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Child's Peer Preference. After each subject completed the Toy Preference Test, s/he was asked to "Name the three children that you like to play with the most". This question was successfully used by Kohlberg and Zigler (1967).

School Toy Choice. The second author recorded the toys with which each child played for three 45-min free play periods in the nursery school day. Following all observations within a culture the observer listed all toys played with and asked a group of 20 adults (10 male, 10 female) to rate the toys as stereotypically masculine, feminine, or neuter. Those judging were in similar occupations to the parents of the subjects (e.g. nurse, postman, teacher). Majority decisions were used to define the sex-appropriateness of the toys. This methodology parallels that of Clark (1969) and Pederson and Bell (1970).

Home Toy Choice. On a questionnaire parents were asked to list the seven toys that their child played with most frequently at home. These toys were rated as stereotypically masculine, feminine, or neuter by the same adults who rated the School Toy Choice items. Fling and Manosewitz (1972) also found it useful to assess the sex-typing of favorite toys at home.

Home Peer Choice. Parents were also asked to list the first names of the three children with whom their child played most often.

Play Behavior Total. Teachers were requested to rate each child's play behavior on seven dimensions of activity: play is vigorous and involves physical contact; child throws objects; enjoys physical activities; likes to play in groups or with other children; enjoys quiet games; while playing or working, likes to sing or talk to self; is affectionate (warm). A five-point rating scale was used, ranging from (1) never demonstrates to (5) always demonstrates this behavior. These dimensions were drawn from Rosenberg and Sutton-Smith (1959) who defined the first three as masculine attributes, the last four as feminine.

Masculinity/Feminity Rating. Teachers were asked to rank order the members of their class from the most "masculine" child to the most "feminine" child. No definitions were provided for "masculine" or "feminine". Vroegh (1971) found this type of rating scale to be a useful index.

Scoring

Two scores were derived for the Toy Preference Test and the Home Toy Choice measure; intensity of same sex preferences or choices (number of same sex toy selections minus number of cross sex selections); and existence of cross sex preferences or choices (whether or not any cross sex selections were made). Similar scores were derived from the School Toy Choice, Child's Peer Preference, and Home Peer Choice measures, but the intensity scores were expressed as a proportion, that is, as number of same sex materials or friends minus number of cross sex materials or friends divided by the total number of toys or friends preferred or actually chosen.

Ratings of Play Behavior and Masculinity/Feminity were standardized within each class. The Play Behavior Total was converted to a z score, while the Masculinity/Feminity Rating was standardized separately for males and females within a class. For females, the mean rank was defined as number of children in the class minus number of females, and each individual score was derived by subtracting the mean rank from the individual's rank, and dividing by the number of females. For males, the mean rank was defined as the number of males in the class plus one, and each score was derived by subtracting an individual's rank from the mean rank, and then dividing by the number of males. Thus, children's Masculinity/Feminity scores ranged from -1 to $+1$ where a negative score implied a cross sex rating, a positive score, an appropriately sex-typed rating.

RESULTS

When one examines the intercorrelations of the seven measures (Table 1), it is evident that preschool children do not behave in a consistently sex-typed manner on these tests. In the upper half of Table 1 are the correlations of the intensity scores; four of 21 are significant. The ten correlations of existence scores are displayed on the lower half of Table 1. Here three of 10 are significant. Even when a correlation is significant, its absolute size is small and therefore little variance is accounted for.

TABLE 1. INTERCORRELATIONS OF SEX-ROLE MEASURES†

	Toy Pref. Test	Child's Peer Pref. Test.	School Toy Choice	Home Toy Choice	Home Peer Choice	Play Beh. Total	Masc.-Fem. Rating
Toy Preference Test	--	[illegible]	.12	.27**	.20*	.05	.21**
Child's Peer Preference	[illegible]	--	.09	.10	.20	.04	.13
School Toy Choice	.33***	.14	--	.10	.09	.07	.03
Home Toy Choice	.19	.14	.24*	--	.01	.06	.14
Home Peer Choice	.17	[illegible]	.21*	.12	--	-.07	.10
Play Behavior Total	--	--	--	--	--	--	.22**
Masculinity-Femininity Rating	--	--	--	--	--	--	--

†Intercorrelations of intensity scores appear in the upper half of the matrix; intercorrelations of existence scores appear in the lower half.
$*P < 0{\cdot}05$; $**P < 0{\cdot}01$; $***P < 0{\cdot}001$.

Second, the correlations do not cluster. For example, on the upper half of Table 1 the Toy Preference Test correlates significantly with both the Home Toy Choice ($r = 0{\cdot}27$, $P < 0{\cdot}01$) and the Home Peer Choice ($r = 0{\cdot}20$, $P < 0{\cdot}05$), but these latter two measures are uncorrelated ($r = 0{\cdot}01$). This is the case for all similar three-measure groupings. In addition, the significant correlations of intensity scores are not supported by significant correlations of existence scores. Though the Toy Preference Test and the Home Toy Choice are strongly correlated in the upper half of Table 1, they are not significantly related in the lower half ($r = 0{\cdot}19$). And this is the case for each of the significant correlations.

Further evidence is provided by the results of a factor analysis of the intensity and existence scores on these seven measures. Each of the five factors produced by the varimax rotation contains the scores of only one instrument (Table 2). Thus, Factor 1 may be called Child's Peer Preference, Factor 2, Home Peer Choice, Factor 3, Toy Preference Test, Factor 4, School Toy Choice, and Factor 5, Home Toy Choice. The teacher ratings do not load above the criterion of 0·5 on any of the factors.

To examine the possibility of age, sex, or culture differences in the consistency of behavior across measures, correlation matrices similar to Table 1 were constructed for each subset of the sample, that is, for 3-year-old American females and 3-year-old American males, for 4-year-old American females and 4-year-old American males, and for the four groups of French children. An average correlation was then computed for each group to serve as a consistency score of the children's performance. The results are as follows: 3-year-old French females, $r = 0{\cdot}01$; 3-year-old French males, $r = 0{\cdot}15$; 3-year-old American females, $r = 0{\cdot}11$; 3-year-old American males, $r = 0{\cdot}15$; 4-year-old French females, $r = 0{\cdot}22$; 4-year-old French males, $r = 0{\cdot}19$; 4-year-old American females, $r = 0{\cdot}22$; 4-year-old American males, $r = 0{\cdot}17$. The average r is somewhat higher for the 4-year-olds, but a statistical comparison of even the largest and smallest r is not significant.

TABLE 2. FACTOR ANALYSIS OF SEX-ROLE MEASURES

	Factor 1 Child Peer	Factor 2 Home Peer	Factor 3 Toy Pref.	Factor 4 School Toy	Factor 5 Home Toy
Toy Pref. Test--Intensity	-.12568	.15312	.72287	.18085	.20708
Toy Pref. Test--Existence	-.08905	.12333	.71053	.29650	.10266
Child's Peer Pref.--Intensity	.84723	.05707	.09539	.10565	[illegible]
Child's Peer Pref.--Existence	.91508	.14816	-.05673	.02327	-.03925
School Toy Choice--Intensity	.07922	-.00353	.08734	.31636	.08499
School Choice--Existence	.00399	.23246	.08718	.86822	.01758
Home Toy Choice--Intensity	.10469	-.01537	.20045	-.03663	.70240
Home Toy Choice--Existence	-.13598	.08552	.01273	.25082	.71573
Home Peer Choice--Intensity	.12841	.78080	.10131	.19615	-.00930
Home Peer Choice--Existence.	.09362	.94192	.08088	.02347	.07548
Play Behavior Total	.02639	-.11602	.17821	-.12464	-.02715
Masculinity-Femininity Rating	.11854	.02966	.40208	[illegible]	.03584

At this point it might be useful to comment that trends and scattered significant results generally support the literature with regard to sex, age and cultural differences (Maccoby and Jacklin, 1974). In particular, where differences were found, boys showed a more intense same sex identity, as did 4-year-olds and French children.

DISCUSSION

From these results one may conclude that preschool children do not demonstrate a consistent pattern of sex-typed behavior on commonly used measures of such behavior. It should be noted, however, that within each measure, children's behavior is stable. That is, they do play with the same set of friends from day to day, and with similar toys. Sex-typed behavior is not lacking; it simply does not remain consistent across measures.

Since measures of sex-typing do not correlate, a researcher must carefully choose measures appropriate to the specific purpose of the research. If it is behavior with which one is concerned, it is not reasonable to use a preference or more attitude-oriented measure as an indicator. In trying to determine what aspect of sex-typing should be of concern, it would be useful to have a commonly agreed upon criterion for validity for sex-role identification. It seems reasonable to define a behavioral measure such as School Toy Choice for this purpose, and then to consider all measures which are highly correlated with School Toy Choice as good measures of sex-typing. This latter decision, of course, is not an easy one to make since, for example, in Table 1 the School Toy Choice correlates with the Toy Preference Test when a measure of existence is used, but not when the intensity score is considered.

The problem of choice of measures is more acute when experimenters use only one measure to differentiate a sample into strongly sex-typed and weakly sex-typed children, and then proceed to assess these children on some dependent measure. The validity of the findings on the dependent measure may easily be questioned.

The lack of intercorrelation between measures will be even more significant if it persists with measures of sex-typed behavior in children older than five. Because the measures used with older children are quite different from those used with preschoolers and few researchers have examined intercorrelations, we have no exact knowledge of how stable sex-role behavior is in 6–10-year-olds. Many of the instruments used with older children are cognitively based (Nadelman, 1974; Williams *et al.*, 1975), and hence scores on them may cluster. However, if one compares children's performance on a cognitive measure with their behavior, one would not predict that a significant relationship would appear. After all, it is well known that attitude and behavior measures are usually uncorrelated in adult populations, and we have evidence that the same is true of preschoolers. Expecting quite different results with elementary school children seems unrealistic.

Whatever the results of further research in this area, it is clear that a firm definition of a strongly sex-typed child is necessary. At the moment researchers must limit themselves to reporting that a measure shows sex-typing on a specific aspect of a child's behavior, and refrain from generalizing to all aspects of sex-typed behavior.

SUMMARY

To examine the consistency of their sex-role identification, 122 preschool children were given seven measures which are frequently used to evaluate this dimension of personality. The degree of sex-typing of the children on any one measure was not strongly related to the degree of sex-typing demonstrated on any other measure. The implications of this finding for methodology in sex-role research are discussed.

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THE DEVELOPMENT OF SPEECH AND MENTAL PROCESSES IN A PAIR OF TWINS: A CASE STUDY

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INTRODUCTION

Reports of studies on children who have been socially isolated from a very early age and who had little or no contact with a linguistic community indicate that these children do not develop speech or are very severely retarded in language development (Clarke, 1972, 1976; David, 1947; Koluchova, 1972, 1976; Szuman, 1958). The suspicion of mental retardation or psychotic disorder as the reason for these children's abandonment or isolation has not been supported by the remarkable rate of behavioural, intellectual and linguistic progress once placed in an environment that stimulated language and other development.

This study attempts to replicate the results obtained in 1933–1935 (personal communication) by Luria and Yudovich (1959), in which 5-yr old boy twins who were severely retarded in their speech and play development were observed. The twins were separated in an attempt to prevent the twin communication which precluded their use of language and also to create an objective necessity for the development of speech. The more retarded of the boys was then given special speech training. Both separation and specific language training were found to be important in the remediation of the twins' language retardation. The main differences between the studies are that the twins in this investigation are girls who were living at home during the intervention period, while Luria's subjects were boys resident in a kindergarten for twins attached to a medical genetic institute. Also speech training was provided for both girls for ethical reasons. The twins in this study were visually identical, but had not been tested for zygosity.

CASE HISTORY

The twins were first born children. Twin B had a forceps delivery during which her arm emerged first and her shoulder was broken. No other special birth difficulties are noted. Both girls showed normal motor milestones. Twin A walked at 15 months

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*Née Francis, under which name with Sutton, this study was briefly outlined in Clarke and Clarke (1976).

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and Twin B at 18 months, but they were delayed in acquiring speech. There was no reason to suspect brain damage as a cause for their mental retardation, although this could only be ultimately proved by acceleration of their linguistic and intellectual skills under suitable environmental (training) circumstances. Luria states about his experimental twins (personal communication) "The children were intellectually normal which it was possible to deduce from their behaviour and their subsequent development".

Their mother had married at 19 but separated from her husband, an itinerant musician, after a year while 6 months pregnant with the twins who were born in February, 1969 and were cared for by friends for 3 months. Their mother had no contact with them during this period as she was working to support herself. They were moved to some distant relatives who intended to adopt them, but this couple's marriage dissolved and the twins were taken into care for a few weeks. A maternal uncle and aunt then looked after them for the remainder of their first year.

During the year, the mother had returned to her husband for 3 months, become pregnant and left again. She moved into a damp, mouse-infested council house, in 1970, which was scheduled for demolition, and lived there with the twins. She suffered from depression during this period and attended her G.P. for treatment. The family was rehoused in November 1971, although remaining in the slum area and mother remarried in 1973. She continued to be socially isolated and depressed, and her marriage did not alleviate her state due to marital conflicts and her husband's long working hours.

The twins were admitted to a day nursery at the age of 4 years in the same area of run-down terrace houses scheduled for demolition. All the children attending were from severely socially and culturally deprived families. The twins were referred for assessment aged 4 years 11 months as there was concern whether they would be able to cope with normal schooling. Their speech was unintelligible and their play underdeveloped. They had made no progress during their period in the nursery. The girls were almost indistinguishable in their verbal and cognitive abilities and in general personality, although Twin A tended to be more dominant. They played together continually and did not mix with other children, but were friendly and amenable to adults.

The psychological assessment on the Stanford–Binet Intelligence Scale (Terman and Merrill, 1961) indicated that both twins had a mental age of 3 yr 7 months (I.Q. 69). Individual scoring of test items was very similar for the two girls.

Intervention at this period resulted in the family being rehoused in an outer suburban area so that the twins could attend a two-form entry infant school under less stressful circumstances of marked social and cultural disadvantage. The purpose was to separate them at school so that they would be exposed to an environment that demanded speech from them individually. It was hypothesized that the twin situation had been instrumental in contributing to the speech delay, particularly in the stressful social conditions under which they had been living.

The parents were very co-operative during the course of the study. They allowed the psychologist to visit their home, and the mother readily bought a suggested bedtime story book. They also permitted a tape recording of all verbal interaction that occurred at home during one evening. During the study the mother's emotional state greatly improved. Her depression lifted and she began to make friends with her neighbours. She liked the flat and the area, and even though the family continued to be under financial stress, due to father's unemployment, she made rapid improvement.

The infant school was made fully aware of the purpose of the study from the outset. The headmistress strongly supported the idea of remediation of early deprivation as she herself had successfully adopted a severely deprived child in the past and had therefore direct personal experience of the rapid acceleration of mental growth under an improved social environment. The staff were also experienced and competent.

INTERVENTION PROCEDURE

The study was carried out during the 1974–1975 school year. The twins spent their first term together in the reception class to familiarize themselves with the new school. They were then separated from each other into parallel classes at the beginning of the school year. They remained in their classes for a term, with no special intervention procedures, to determine the effect of simple separation on their speech and intellectual development. Both girls were then given language training from February to June.

The psychologist spent half an hour every week with each child individually in a specific language training situation, the aims being to:

(1) teach the functional usage of speech,
(2) increase sentence complexity and length of semantic expansion (Cazden, 1966),
(3) teach the usage of different parts of speech and increase vocabulary.

Clear articulation and pronunciation were not stressed, intelligibility being the criterion for communication rather than grammatical correctness.

The materials used included Zero Book (Macdonald Educational), small books available in the school to be used as visual stimuli for discussion, nursery rhyme books for repetition and rhythm in speech, and materials from the Peabody Language Development Kit (Dunn *et al.*, 1968), i.e. stimulus cards, plastic fruit, posters, mannikins and clothes. A programme for the varied use of materials was devised.

The twins separately attended a remedial group of ten children on alternate mornings, most of whom also showed speech retardation. This was a regular provision of the school. The psychologist provided materials and advice for language training to the remedial teacher, and gave demonstrations of how to conduct language training in the group. A programme of specially designed instruction sheets was also provided to stimulate thoughts on how to use the materials.

The psychologist discussed the study fully with the two class teachers and suggestions were made as to how they could stimulate speech in the classroom. Contact was made every week so that progress and difficulties could be reported. The weekly meetings also provided an opportunity to give encouragement and support for their attempts, as well as positive feedback from the special language training sessions.

The language training phase of the study was designed to be carried out during the normal school routine, without making special demands on the teachers who were working under the usual under-staffed conditions in urban education. The only additional resource was the weekly visit by the psychologist to the school.

RESULTS

Psychometric and linguistic assessments were made using a variety of tests, before and after separation from each other and after language training. These were administered by psychologists experienced in testing children and the same person re-tested the twins to reduce intertester variability. Tester bias could not be totally eliminated under the conditions of the study, and familiarity with the tester may have affected re-test results (Sachs, 1952; Zigler and Butterfield, 1968).

1. *Linguistic assessment*

Results on the Reynell Development Language Scale (Reynell, 1969) demonstrate clearly the acceleration in both comprehension and expressive ability in both girls during the period of intervention (Table 1).

The initial administration of the Edinburgh Articulation Test (Anthony *et al.*, 1971), after separation of the twins, indicated that their speech was immature rather than deviant in pattern. This "diagnostic" information was necessary to determine the type of language training that would be used (Menyuk, 1964; Morehead and Ingram, 1970). On reassessment after language training there appeared to be no particular progress in articulation although the re-test was considered to be unreliable. Both girls lacked their upper incisors during the re-assessment.

TABLE 1. GROWTH IN THE TWINS' LANGUAGE OVER THE COURSE OF THE EXPERIMENTAL YEAR AS RECORDED BY THE REYNELL DEVELOPMENTAL LANGUAGE SCALES, EXPRESSED AS AGE-SCORES IN YEARS AND MONTHS

Chronological age:	5–4	6–4
Reynell age scores		
Comprehension		
Twin A	3–4	Above 6
Twin B	3–8	5–1
Expression		
Twin A	3–0	6–0
Twin B	3–6	5–3

2. *Intellectual assessment*

The results on the Wechsler Pre-School and Primary Scale of Intelligence (Wechsler, 1967), showed an increase in standard scores during the period of separation. However, apart from the 12-point increase in the verbal score for Twin A none of the increments appear greater than would be expected from retest effects. During the language training period, of 5 months, there was a much higher rate of acceleration of abilities, bringing the girls up to a level of their peers. In the classroom after the final assessment, the teachers reported that the girls were functioning well within the mid-range of the class, whereas on admission they had been at the bottom.

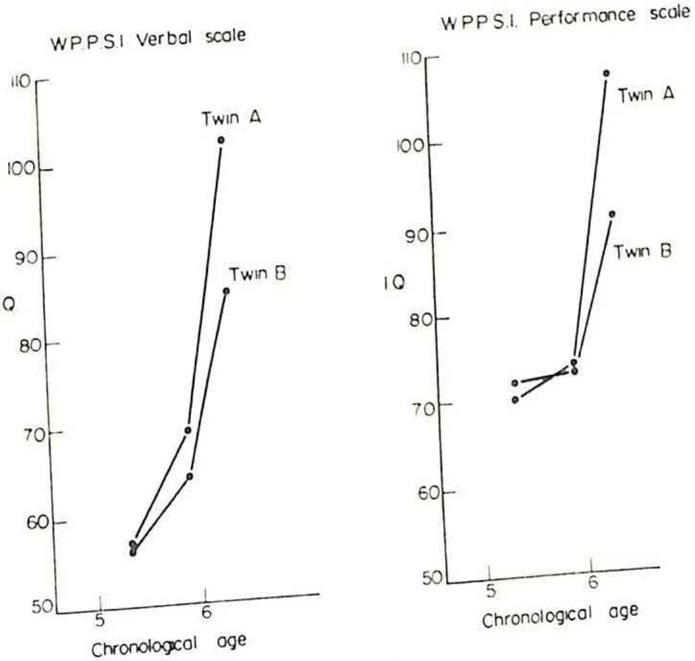

FIG. 1.

The large score increases on both verbal and performance items indicate that the language training period affected not only verbal items, but other cognitive functions as well. No specific training was given in perceptual–motor tasks over and above that ordinarily provided during the normal course of education. During the course of intervention the significant discrepancy between verbal and performance scores ($P < 0{\cdot}05$; Wechsler, 1967) was eliminated.

During the period of language training the twins started to demonstrate a divergence of abilities. On their initial assessment the girls had been virtually identical in their intellectual functioning, although a floor effect in the tests may have accentuated this. They finally diverged to show a 19-point difference in Full Scale Scores.

Other psychometric test results also demonstrate the development in intellectual functioning in the twins although the actual scores differ widely (see Table 2). The validity of the Stanford–Binet (Form L–M Terman and Merrill, 1961) for British children has been seriously questioned by several studies (Himmelstein, 1966; Phillips and Bannon, 1968; Berger, 1970), which suggest that the scores could result in serious misclassification particularly for children well above or below the average range of ability. The standardization sample of the WPPSI included both minority and culturally deprived groups and its evaluation on a British sample (Yule *et al.*, 1969) supports the view that it is comparatively well-standardized test for British children, therefore, the scores obtained on the WPPSI may reflect the intellectual functioning of the twins more accurately than the Stanford–Binet.

The English Picture Vocabulary Test I scores (Brimer and Dunn, 1962) were influenced by a floor effect on the first administration which elevated the pre-intervention results. The scores obtained after language training were well below

TABLE 2. PSYCHOMETRIC SCORES OF THE TWINS EXPRESSED AS STANDARD SCORES DURING THE DIFFERENT STAGES OF INTERVENTION

Chronological age	5 yr 4 months (before separation)	5 yr 11 months (after separation)	6 yr 6 months (after training)
Twin A			
Binet (L–M)	71 (−1·80 SD)	—	89 (−0·70 SD)
E.P.V.T.I.	77 (−1·55 SD)	—	80 (−1·35 SD)
Goodenough	53	68	75
WPPSI (Full Scale)	60 (−2·70 SD)	68 (−2·15 SD)	105 (+0·32 SD)
Twin B			
Binet (L–M)	71 (−1·80 SD)	—	85 (−0·95 SD)
E.P.V.T.I.	71 (−1·95 SD)	—	77 (−1·55 SD)
Goodenough	65	85	85
WPPSI (Full Scale)	60 (−2·70 SD)	65 (−2·35 SD)	86 (−0·95 SD)

the WPPSI results, but as training was geared more to a functional usage of speech rather than increasing vocabulary this would be expected.

The Goodenough–Harris results (Harris, 1963) were considered unreliable for Twin A as she seemed opposed to drawing any realistic objects, while her sister would happily sit down and draw. Twin B's scores are, therefore, thought to be indicative of her ability.

DISCUSSION

The acceleration in the twin's level of functioning makes it highly unlikely that brain damage or mental retardation could account for the speech delay. The twins' response to a remediating environment suggests that early environmental factors were responsible for their delayed development.

Twins are known to be generally delayed in their speech development compared to singletons (Rutter and Mittler, 1972). Zazzo (1960) has also postulated the "closed communication system" of the twin situation as contributory to this finding. The case history of these twins indicated that they had been thrown very much into each other's company during their early years. Their frequent change of caretakers during their first year and their subsequent stay with their depressed and isolated mother in poor housing conditions would have exacerbated their dependence on each other. The severe degree of speech delay can, therefore, be assumed to be a result of deprivation of consistent and adequate interaction with adults as well as the "twin situation". The training procedure was designed to stimulate language as a functional method of communicating, enabling ideas and information to be exchanged between the adult and child and of introducing the twins to alternate and new ways of structuring their experiences.

The twins' placement in the two-form entry school had an effect on their development without special training. Changes were observed during the period in the reception class and initial separation.

In the reception class they learned to play separately while in the same room and during the term of separation they began to work and relate as individuals. Initially they repeatedly went to each other's classroom, but by the end of the term the proportion of class time spent doing this had greatly reduced. This was an important phase of adjustment for the girls even though there was no significant psychometric change in their level of functioning. But the rate of acceleration of development that the girls showed was markedly below that achieved during the training phase. We can infer from this that the twins might have continued to improve without intensive intervention, although the time taken to catch up with their peers would have been much longer. The problems associated with their speech delay might have been prolonged and perhaps exacerbated as they grew older.

Emphasis has been laid on the importance of language training during the experimental phase, but this cannot be separated from the general increase in the teachers' positive expectations of the children's performance, which was deliberately engendered by the psychologist. The regular discussion times provided positive feedback to the teachers may have been an important factor in altering their response to the twins in the class.

Finally, the rare set of coincidences that made this study possible should be emphasized. First, the twins were placed in a nursery school which accepted early referral for special educational placements. Second, the referral was passed to a psychologist who was aware of the Soviet twin study and was concerned to assess the potential development of the children. Third, it was possible to re-house the family on the basis of psychological recommendations and place them in the catchment area of a two-form entry infant school where the headmistress, with her background of successful fostering of a deprived child, and her staff supported the idea of remediation of early deprivation. Finally, psychologist time was available at the crucial point of school transfer to plan and implement the study. All of these factors were important for the completion and successful outcome.

This study has clearly shown that the severe degree of developmental delay shown in these twins at the age of 5 yr could be remediated within 1 yr so that both girls were well able to cope with normal schooling. A follow-up discussion with the headmistress after the end of the training period indicated that both twins had maintained their level of progress and would be transferring to junior school with the rest of their year group.

SUMMARY

Severely speech delayed twin girls were separated into parallel classes and given language training with the aim of remediating the effects of their early deprivation. The acceleration in their linguistic ability was paralleled by marked increase in intellectual functioning as measured by standardized psychometric tests.

The relationship between language training and intellectual development is discussed, together with the importance of a structured language training programme with an adult in an interactive teaching situation.

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ANNOTATION

INDICATIONS AND CONTRA-INDICATIONS FOR THE USE OF FAMILY THERAPY

S. WALROND-SKINNER*

FAMILY therapy can be defined as the psychotherapeutic treatment of the family system using as its basic medium conjoint interpersonal interviews. It includes many sub-specialities, the most important of which is conjoint marital therapy—which addresses itself to the marital system, in the same way that family therapy focuses on the family system. For the purposes of this annotation, the literature referring to indications for both family and marital therapy will be discussed.

A variety of problems confront the theorists who would attempt to define the conditions which indicate or contra-indicate the use of family psychotherapy as the treatment of choice for emotional, psychiatric and behavioural disorders. Not least of these is the immaturity of the subject itself—family therapy having been recognized as a valid psychotherapeutic modality for barely 20 years. Stein (1969) for example, writes of the "experimental, evolutionary and partial quality of most investigations in the family field". Hence it would be true to say that family therapy is still at a "pre-theory" stage of development, with practitioners and researchers simply lacking sufficient experience of their subject to be able to offer anything approaching a definite set of conditions for its use. Empirically based and properly controlled outcome studies into the effectiveness of family therapy are almost entirely lacking (Wells *et al.*, 1972) and whilst work specifically focusing on the outcome of conjoint marital therapy has been rather more widespread (Gurman, 1973; Gurman and Rice, 1975) this too is inconclusive. Lacking too is any established taxonomy of family types which would enable the practitioner to move outside traditional psychiatric nosology into a genuine systems framework of interpersonal disorders (Walrond-Skinner, 1976).

The practitioner, working at this pre-theory stage and requiring some guidelines for case selection, develops working metaphors to describe the conditions which appear to him to respond favourably to treatment. Skynner (1976), for example, talks of a "kind of sandwich distribution regarding the suitability for group treatment whereby the most primitive levels of development and the more sophisticated levels could use group situations fruitfully . . . while the level intermediate between these 'top' and 'bottom' levels requires a dyadic relationship". Obviously, such metaphors, arising out of the day-to-day experience of the practitioner, provide fruitful ground for developing hypotheses. The danger arises when apparent confirmation of the metaphor's accuracy occurs subtly over time. It then becomes enshrined not as the product of controlled research, yet inappropriately takes on the status of scientific fact.

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A further difficulty needs to be borne in mind. The term family therapy describes a modality, which in turn embraces a complex range of methods, each employing treatment techniques specifically suited to the particular approach being used. Modality, method and technique—each is addressed to a different level of therapeutic functioning and the sometimes muddled and contradictory statements made about treatment indications may result from a confusion between these three levels. For example, family therapy might be dismissed out of hand because the family seems poorly motivated to come to the clinic; shows little interest in gaining insight into its difficulties and is beset by grave environmental problems of a material nature. What may at first seem a contra-indication for the modality, may turn out instead to be a contra-indication for one of its methods (in this case, the psychoanalytic approach) and an indication for another (in this case, the structural approach). The major part of this annotation is concerned with the current state of discussion regarding indications and contra-indications for the modality not its widely differing methods or technical approaches.

A final problem worth mentioning is the fact that few writers have attempted to assess the relative merits of family therapy versus other psychotherapeutic modalities with the same kind of problem, an exception being the work of Wellish *et al.* (1976). As the report of the Group for the Advancement of Psychiatry (1970) points out "the problem is whether there are indeed particular conditions that respond more easily to family therapy than to other forms of treatment". This report found that in considering the indications for family therapy compared with other types of therapy, 83% of questionnaire respondents expressed interest in comparing the outcome of family therapy with various forms of individual psychotherapy, whereas only 47% made a conscious choice between family therapy and any form of group psychotherapy. As regards a comparison with other types of treatment interventions such as behaviour modification, chemotherapy or in-patient treatment, the situation is even bleaker, a notable exception being the work of Langsley *et al.* (1968), where the effects of family therapy are compared with the effects of hospitalization.

A search of the literature from approximately 1960 to 1976 is disappointing in that it reveals little in the way of any growing sophistication in its attempts to refine the clinical conditions in which family psychotherapy may appropriately be used. However, with these caveats in mind, some of the approaches that are made to the problem will be considered.

THE "EXCLUSIVE APPROACH" POSITION

For some, the question of indications or contra-indications simply does not arise. All symptomatology becomes, for these practitioners, amenable to change through the intervention in and manipulation of the individual's most salient psycho-social system—usually his family. Family therapy (or systems therapy as it is more usually described in this generic context) is thus regarded as a new orientation to problems of mental illness and, since systems must be adapted to individuals, not individuals to systems, family therapy or systems therapy is considered to be almost universally appropriate in its application.

THE "TREATMENT OF LAST RESORT" POSITION

At the other extreme are those who employ family therapy when all other treatment modalities have failed, and the failure of other treatment interventions is hence the criterion for employing family therapy. This approach has meant that family therapy has been tried out in an impressive array of "untreatable situations". Chronic schizophrenia, recidivism, child abuse, drug dependency, have all been exposed to family therapy, the treatment choice being made on the basis of absence of any alternatives.

THE "DIAGNOSTIC AID" POSITION

A different view from either of the above, is often adopted by practitioners who are mainly committed to their own discipline and its traditional tools and practices, rather than to the full-time practice of family therapy—be they psychiatrists, social workers or clinical psychologists. Conjoint family interviewing is seen as an aid to promote the more effective use of individual, group or in-patient treatment and is used either initially as a diagnostic aid to treatment selection or as an intermittent event during a crisis phase of therapy—for example, when a child is to be returned to his parents after a period in a children's home. A series of family interviews may be conducted after a schizophrenic patient has returned home in order to maintain his improvement in the community; or a once off conjoint interview may be arranged to try to discover why a successfully treated individual has found that his symptoms have recurred. The selection of family therapy for brief periods is based on the need to unlock intra-psychic or interpersonal resistance which may occur during the course of another treatment modality.

THE DIFFERENTIAL TREATMENT POSITION

Despite the difficulties discussed in the opening section, this fourth group embraces all those practitioners who endeavour to select family therapy as the treatment of choice from a range of possible treatment interventions. As has already been stated, the criteria used for selection derives more from ongoing clinical experience of "what works" than from hard research findings. One of the reasons why comparisons are difficult is that practitioners are working from very different theoretical stances and hence from different basic assumptions, so that categories are often contradictory between one writer and another. Moreover, as with any other type of psychotherapy where the therapist's own self is such a vital ingredient in the therapeutic process, the practitioner will necessarily use very personal yardsticks for drawing up his own list of indications and contra-indications, depending on the type of families and situations with which he knows he can or cannot work.

INDICATIONS

(1) Symptomatology, of whatever kind which is felt by the practitioner to be embedded in a dysfunctional system of family relationships. Wynne (1965), for example, states that some form of family therapy is indicated "for the clarification and resolution of any structural intrafamilial relationship difficulty". Here the approach is essentially directed towards the family system, with less regard being paid to the presenting symptom as an indicator of whether or not to employ family

therapy. In summary, wherever the identified patient's presenting problems are seen to be expressing the pain or dysfunction of the family system, family therapy automatically becomes the treatment of choice, unless there are specific indications to the contrary.*

(2) Clinical situations which are presented transactionally by the patient in terms of a relationship rather than in terms of an individual family member's symptomatology. For example, dysfunctional situations which are presented by one or both parties as marital conflict; difficulties involving sexual dysfunction; relationship difficulties occurring in other intimate interpersonal systems such as unmarried heterosexual or homosexual couples; parent/child or parent/adolescent problems presented as involving the system or sub-system as a whole. Where family members are themselves perceiving their difficulties in relationship terms, it is usually felt to be retrogressive for the practitioner to offer a form of treatment which focuses on one party only. The method or sub-speciality of family therapy chosen may not of course be the treatment of the whole family group on its own. In preference, the practitioner may select conjoint marital therapy (where marital or sexual problems are presented); kin network therapy (where a wide circle of relatives, friends and work associates appear to be intricately involved in the problem); or multiple couples/family therapy (where strong positive or negative transference feelings prevent the therapist from working effectively with the marital pair or family on its own, or where the therapist is felt by the family to be too overpowering, for example, where the family has a poor sense of group identity (Lacquer, 1972). For some practitioners, multiple couples work is always the treatment of choice for marital problems (Framo, 1973).

(3) Family therapy is routinely employed by a large number of practitioners in different types of separation difficulty (although this is also given as a contraindication by some, who feel that individual or stranger group treatment is more appropriate when an adolescent is trying to separate from his family or when a marriage is breaking up). In these situations, individual, group or in-patient treatment may often be employed by the therapist alongside family therapy (Byng-Hall and Bruggen, 1974).

(4) Writers working largely from within a psychoanalytic conceptual framework highlight the usefulness of family therapy when members of a family are "functioning at a basically paranoid-schizoid level, with part object relationships, lack of ego boundaries and extensive use of denial, splitting and projection" (Skynner, 1969). The rationale used is that in these families, basic psychological features, normally located within the individual, are "scattered" between family members. Hence it is only by assembling the whole group, that the therapist can hope to attend to the various split off and projected intra-psychic attributes of each individual. Family therapy enables individuals to reality test some of their paranoid phantasies, hopefully with positive effect, enabling each to begin to reintegrate the projected negative parts into themselves again.

(5) Finally, family therapy has been successfully employed with "hard to reach" disorganized families who would not normally be able to mobilize sufficient re-

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* This would be the traditional position by all the major writers on family therapy.

sources to enable them to participate in a sustained therapeutic programme. Again, the use of family therapy with low socio-economic, severely deprived families with poor verbal skills is sometimes cited as a contra-indication; but Minuchin *et al.* (1967) as well as many others have convincingly shown that family therapy, employing an active, directive approach to problem-solving, is often the only intervention that is likely to be effective.

CONTRA-INDICATIONS

(1) Practical limitations. The physical or psychological unavailability of crucial family members is the first practical consideration for the family therapist to bear in mind. Family members may either be dead, geographically distant or completely unmotivated to engage in any type of therapeutic work. On the other hand, it may be the absence of appropriately experienced and personally suitable therapists that prevents the employment of family therapy in a particular agency or area, even when families seem well motivated and where, from other points of view, family therapy would be indicated.

(2) Often family therapy is contra-indicated because the situation has been presented too late to offer the family therapist much hope of bringing about constructive change. In other words, the prognosis may simply be too poor to warrant the necessary expenditure of effort. Ackerman (1966) for example, cites as a contra-indication "the presence of a malignant irreversible trend towards break-up of family which may mean that it is too late to reverse the process of fragmentation". Here, of course, those family therapists who engage in divorce therapy would not necessarily agree, though even those would generally admit that the desire to separate relatively undestructively would be a necessary pre-requisite for commencing treatment.

(3) The dangers of engaging in family therapy with some families are frequently alluded to, where the emotional equilibrium is so precariously maintained that attempts at changing the relationship system may precipitate a severe decompensation on the part of one or more family members. Many apparently highly stressful interpersonal situations are ego-syntonic for the individuals involved, and attempting to upset this balance may mean that the last condition becomes worse than the first (Pittman and Flomenhaft, 1970). It may also be felt to be psychologically dangerous to engage in family therapy where one or more members are organically ill, since the sessions might either increase the level of stress intolerably for that member or might raise unjustifiable "magical" hopes in other family members that the family member's organic symptoms will be removed.

(4) Families where one or more members are depressed are often considered to respond poorly to family therapy, since the depressed member may find it difficult to participate meaningfully in conjoint sessions, or to share a therapist. The same rationale may contra-indicate family therapy for severely emotionally deprived individuals. However, in both of these situations the use of individual psychotherapy for the symptomatic members, in conjunction with the conjoint sessions may well enable family therapy to be productive.

(5) Finally, it may sometimes happen that the family therapist is asked to take

on the treatment of a family by an agency such as a Court or School and where, unbeknown to the therapist, there is a hidden agenda to be fulfilled (Zuk, 1976). The family therapist may suddenly find himself forced to collude with an external decision-making process where, for example, his prior commitments of confidentiality to the family is called into question by a third party. Families where child abuse is suspected may, for example, involve the family therapist, if he is not extremely careful in making written statements or court appearances in favour of one part of the family against the other—a position which is always inimical to his role as therapist to the whole system. It may ultimately be quite harmful to the family to begin treating these situations via family therapy, where there are severe entanglements between the other agencies involved in the treatment.

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ANNOTATION

"SOFT" NEUROLOGICAL SIGNS AND LATER PSYCHIATRIC DISORDER—A REVIEW

DAVID SHAFFER*

A NUMBER of neurological signs have been described as occurring more frequently in groups of children with behaviour or learning problems than in "normal" children (Adams *et al.*, 1974; Kennard, 1960; Rutter *et al.*, 1966; Stine *et al.*, 1975; Wolff and Hurwitz, 1973). Such signs include involuntary movements of a choreic or athetoid type, motor abnormalities such as synkinesis (mirror movements), dysdiadochokinesis (difficulty in performing rapid alternating movements) and general clumsiness as well as sensory abnormalities, in particular dysgraphaesthesia (inability to identify or reproduce shapes outlined by the examiner on the palmar surface of the child's outstretched hand).

Such signs are often referred to as being "soft". Rutter *et al.* (1970a) have pointed out that the term "soft" is used to describe different groups of signs for quite different reasons. Some are labelled "soft" because they run a developmental course and do not have any clear locus of origin. Such signs are not pointers to disease in the traditional sense and their pathological roots are obscure. Most of the signs mentioned above, all of which are age-related (Peters *et al.*, 1975), would come into this category. Most, however, can be elicited readily and reliably (Rutter *et al.*, 1970a). A different group of signs are considered "soft" because they are minor in degree and because they are difficult to detect in a reliable fashion. Such signs would include reflex or tone asymmetries.

Soft signs occur in many otherwise normal children. Thus Adams *et al.* (1974) found that 10 per cent of 9–11-year-olds without behaviour or learning problems had dysgraphaesthesia and 8 per cent dysdiadochokinesis. Rutter *et al.* (1970a) found that 14 per cent of normal 10–11-year-olds showed mirror movements, and Wolff and Hurwitz (1966) found that choreatiform movements could be elicited in 11 per cent of normal children.

Almost all studies have shown a relationship between the presence of these signs and age and I.Q. They are also sex related, and for a given age and I.Q. occur more frequently in boys. When such factors are taken into account many signs fail to discriminate between problem and nonproblem children, although both dysdiadochokinesis and dysgraphaesthesia are found more often in disturbed children even after taking account of age, sex and I.Q. (Adams *et al.*, 1974; Myklebust, 1973; Peters *et al.*, 1975). We do not know whether the association with disorder is increased if such signs persist into adolescence or adulthood. However, a number of studies have appeared over the past decade which suggest that they are found especially often in older patients suffering from particular types of psychiatric disturbance. The studies have been such that it is not possible to tell whether the soft signs have been present since childhood, nor is it possible to determine what—if any—type of disorder would have been diagnosable during childhood.

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The association was first noted by Hertzig and Birch (1966, 1968) who examined successive cases admitted to the adolescent service at Bellevue Hospital. A high proportion of psychotic patients were reported to have abnormal "soft signs". However, these studies were uncontrolled, did not take account of current drug intake, included patients with frank neurological disease and also listed hyperkinetic behaviour as a soft sign. In a somewhat more satisfactory study, Rochford *et al.* (1970) examined 65 random admissions to three adult psychiatric units. Examination took place after a drug-free period of 48 hr and 20 staff controls were studied as well. This study found an excess of soft signs among schizophrenic patients and patients diagnosed as having a personality disorder but no excess in patients with an affective illness. It is questionable whether the drug-free period was of sufficient length and the use of staff controls would have rendered the study non-blind.

Mosher *et al.* (1971) have undertaken a clinical neurological examination on 15 pairs of identical twins discordant for schizophrenia. Eleven out of 15 of the discordant twins had abnormal signs compared with three out of 15 of the unaffected siblings. The authors are cautious about drawing conclusions from this study for the probands differed with respect to previous intake of phenothiazine drugs, e.c.t. and hospitalization. Nor can this study indicate whether abnormal findings are specific for schizophrenia. In most twin studies there is an excess of perinatal abnormality and so no conclusions about the prevalence of signs amongst schizophrenics can be drawn.

The most satisfactory investigation has been that by Quitkin *et al.* (1976). Earlier studies had suggested to these workers that adult schizophrenics who had experienced marked personality difficulties in childhood (characteristically being friendless, having academic difficulties and narrow interests) were especially likely to have a neurological abnormality for they often gave a history of delayed developmental milestones, learning problems at school and had uneven score patterns on psychometric examination. They labelled this group Schizophrenia with Premorbid Asociality (SPA). For similar reasons they suspected an organic basis in certain patients with a personality disorder. These were patients who were characteristically antisocially impulsive and who had frequent but brief non-reactive mood swings. They have called this group Emotionally Unstable Character Disorder (EUCD). In the study under discussion, they examined 298 consecutive admissions under the age of 50, none of whom had organic neurological disease or had been treated previously with e.c.t. All patients were withdrawn from drugs for at least 10 days before examination. The reliability and consistency of the examination was systematically assessed and was carried out blind to the psychiatric rating. Both the SPA and the EUCD groups differed from other diagnostic categories in more commonly exhibiting dysdiadochokinesis, agraphaesthesia, mirror movements, finger apraxia and disturbances of speech and gait. There was no excess of such signs in patients with other forms of schizophrenia, affective disorder or other types of personality disorder. The importance of a drug-free period was emphasized by a subsidiary finding of a high prevalence of signs in a group of diagnostically mixed patients receiving drugs.

These studies suggest that disturbed children with neurological dysfunction may develop specific psychiatric syndromes in later life. It is not clear, whether later disorder is directly related to persisting C.N.S. abnormalities or whether the association is more oblique. It may be, for example, that the link is through the experience of earlier school or learning difficulties. Before drawing conclusions about the nature of the association it would be necessary to examine the correlates of soft signs in an unselected adult or adolescent population and by longitudinal research, to identify the factors associated with the disappearance or persistence of these poorly understood clinical phenomena.

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CRITICAL NOTICE

Child Psychiatry: Modern Approaches. Edited by MICHAEL RUTTER and LIONEL HERSOV. Blackwell Scientific Publications, Oxford, 1977, pp. xiv + 1024. £21.50.

THIS BOOK is simply splendid—not flawless, but splendid (which, according to my Webster's dictionary, means brilliant, grand, outshining the usual or customary, illustrious, excellent). It is the text all of us have been waiting for. I have already assigned it as the basic reference source for our trainees, both graduate and undergraduate. If I could, I would make so scholarly, incisive and authoritative a volume required reading for all practitioners who work with children. That may sound like excessive praise, but I can attest to the intellectual stimulation the book provided me despite (or perhaps because of) 25 years in the field. Rutter's chapters on development, Shaffer's on brain injury, Hersov's on school refusal, Rutter and Yule's on reading difficulties, Corbett's on retardation and Yule's on behavioral approaches are particular gems in a book studded with excellent contributions.

If the first edition of Kanner's *Child Psychiatry* in 1935 be taken as an announcement of the birth of our field as a speciality, Rutter and Hersov (hereinafter R and H) signals its coming of age. By any system of accounting, there has been an enormous growth in the empirical and theoretical foundations of child psychiatry in the 42 years between these two events. By far the most important contribution to that growth has come from the Bethlem Royal and The Maudsley Hospital and the associated postgraduate medical school, the Institute of Psychiatry. It is therefore particularly appropriate that this textbook should be edited and written by past and present members of The Joint Hospital staff.

Until now, child psychiatrists have tended to be regarded by their adult colleagues with an amused tolerance. What we do has been regarded as a decent sort of thing, humanitarian and all that, but rather a bit like what a kindly grandmother might offer a troubled and unhappy child, necessary but hardly medical. Many of us have resented the condescension but have remained troubled by feelings of inadequacy, much like the relationship between pediatricians and internists a generation ago. It would be too much to claim that the information assembled in this book will bring us the professional recognition pediatrics has belatedly achieved, but I, for one, feel better able to hold my head up when I acknowledge my specialty. No, we do not have all the answers and we never will, but we are discovering the important questions and how to go about approximating their solutions.

R and H *is* flawed and the remainder of this review will be devoted to an assessment of its shortcomings, with the reader reminded they do not seriously detract from the grandeur of the accomplishment. The Preface makes clear the intent to provide a textbook of child psychiatry. Though by far the best text yet published, R and H falls a bit short of the mark in that some of its sections read more like a critical review of the literature than an integrative summary. That is, although the several authors have not hesitated to assess the reliability of what passes for data and theory in the literature of our field, many have been unduly reluctant to put together a systematic account of what, on present evidence, would seem the most likely way of accounting for a given disorder. It is possible to take the position that a serious student should do the integrating himself or herself; indeed, all of us must learn to live with the ambiguities and uncertainties that make integration difficult. I would argue, however, that a textbook has more of a responsibility to pull things together than a volume of *Advances In . . .* or *Critical Reviews of . . .*

A few of the chapters are so condensed as to be of limited use to the beginner. Dare's chapter on psychoanalytic theories epitomizes the similarities and differences among the analytic positions of Sigmund Freud, Anna Freud, Melanie Klein, Erik Erikson, Margaret Mahler and D. W. Winnicott. For the psychoanalytic sophisticate, this is a remarkable condensation and an instructive comparison, but I doubt it will be intelligible to the novice. In contrast, his chapter on dynamic treatments provides a trenchant summary of the fundamental elements in psychodynamic psychotherapy. It is obvious that a Chapter of 17 pages cannot provide a "how to do it" kit but the careful reader will be alerted to the special aims and basic premises of the psychoanalytic approach. Bryant, in trying to say something useful about Piaget in limited space, faced a particularly difficult task. Even if one sets aside the enormous corpus of work Piaget has produced and simply considers his basic concepts and the evidence on which they are founded, one discovers that it took Flavell in *The Developmental Psychology of Jean Piaget* 462 pages to do it. How, then, does one manage to convey to the student what Piaget is about in fifteen? Bryant's solution, a very reasonable one under the circumstances, is to limit himself to a very few Piagetian concepts and to identify the interpretations alternative to them, as these can be tested by crucial experiments. What he has written is stimulating and provocative but it provides only the most bare-boned introduction to Piaget. I would hope that Bryant could be encouraged to prepare an expanded version for the second edition of R and H, one with a more extensive outline of the elements of Piaget's theories, although I recognize that space provides a serious dilemma in the preparation of a textbook if a multi-volume unmanageable encyclopedia is to be avoided.

The predominant focus on the British scene, inevitable from the choice of authors, has at times resulted in a degree of parochialism that may be more of a disadvantage for the British than the American reader. For the latter, the local emphasis is a very considerable asset because the references to the non-psychiatric literature (educational, psychogical and sociological) are less likely to be familiar to us. In most instances, extrapolations from local peculiarities of law or differences in terminology are not difficult to make, although I am not entirely sure about the distinction among "day nurseries, play groups and nursery classes" on p. 399; indeed, I wonder whether the different names reliably describe different services in view of the loose usage of "day care", "preschool" and "nursery school" so often encountered in the States. But it might well have been instructive, for readers on both sides of the Atlantic, to have made more of a contrast in experience and practice on the two continents. For example, given the rather extensive current agitation in the States about the "right" of adopted children to identify their biological parents, it is surprising to find so little mention of it in an otherwise comprehensive and masterful chapter on adoption. At the moment, the agitation by adoptees to secure that information seems to be overmastering the objections of many adoptive parents and the uncertain attitudes of the biological parents, some of whom turn out to be quite unhappy about being "discovered" many years later. There are problems of conflicting legal rights of each of the parties with respect to the assurance given both sets of parents by earlier decrees governing adoption. Some professionals have expressed fear that lack of confidentiality for parents might discourage the practice of adoption. One can anticipate that these concerns will be shared in Britain, even if they are being noised about more loudly in the States for the moment. And it might have been helpful to consider possible reasons for the differences in perspective in the two countries.

A further example of a missed opportunity is evident in the treatment of the hyperkinetic syndrome. Cantwell contributes an excellent survey of the clinical problem (the best short summary to be found anywhere), this time very much from an American viewpoint, though one enlightened by his experience at The Maudsley. The reader is told (p. 530) about the enormous differences in estimated prevalence in the two countries (0·1% from the Isle of Wight study in contrast to going estimates in the United States which vary from 5 to 20%). What accounts for this staggering discrepancy? Does it reflect nothing more than fashions in diagnostic terminology or are there actual differences in prevalence of a clinical condition because of parenting or schooling practices, of urbanization, of social disadvantage or even, if you like, of diet? Cantwell clearly believes, as most clinicians in the States do, that the disorder is a valid clinical syndrome, though its causes are heterogeneous. Shaffer in writing on brain injury comments: "The diagnosis 'hyperactivity syndrome' is an unsatisfactory one" (p. 198) and Rutter (p. 371) shares his skepticism; yet Shaffer in writing on drug treatment proceeds to recommend therapy for this condition (p. 909): "Stimulant drugs should be considered for use with children who present with a behavior disturbance, especially when the clinical picture is dominated by poor attention, overactivity and disruptiveness in class, and when clinical and psychometric examination reveals the presence of neurological 'soft' signs, EEG abnormalities or deficits in cognitive function". Set aside for the moment the unconvincing nature of the evidence that borderline EEG abnormalities or "soft" signs predict drug response; Shaffer himself has provided a sharp critique (pp. 190–199) of the loose concept of "minimal brain damage". But the inconsistencies among and within chapters suggest a possible clue to the difference in British and American clinical practice. Is what American child psychiatrists call "hyperkinetic disorder" a variant of what our British colleagues label "conduct disorder" because of their emphasis on disturbed behavior at home and school rather than the more elusive, if sometimes striking, manifest overactivity? I do not suggest that the editors should have legislated a "correct" position or have taken a majority vote to identify the "truth" in order to impose consistency. Quite to the contrary. The issues are anything but settled. But the differences should have been confronted directly by making the divergencies explicit and setting forth the possible reasons for them. I, for one, would have profited from the juxtaposition of conflicting opinion by so scholarly a set of authors. In similar fashion, detailed explication of U.S.-U.K. differences would have added to the excellence of the chapters on delinquency and addiction.

There are other places where the editors have opted for an exposition of basic principles without a complementary section on practical aspects. Cox and Rutter have provided the best discussion on diagnostic appraisal and interviewing to be found anywhere. They specifically eschew any intent "to provide a cookbook description of how to carry out a diagnostic appraisal". For working guidelines, the reader is referred to the bibliography. In a future edition, I would urge them to provide appropriate interview schedules which beginners badly need. This caveat does not apply to Berger's chapter on psychological testing. Here the aim is appropriately different. The physician most often will not do the testing himself or herself but will need to understand the principles of test construction and administration, how to phrase questions that can be answered by systematic testing and how to assess the validity of the assessment provided by the psychologist. The clinician who reads this chapter thoughtfully will emerge as a more intelligent "consumer" of psychological information. In similar fashion, the chapters on the EEG, genetics and chromosome anomalies are quite useful, though the last named is a bit short on the newer methodologies and on the most recent findings (there are only two references dated later than 1972 in a list of over 70, this in a field that has expanded enormously within the past 5 years).

These caveats are trivial in relation to the enormous accomplishment of the whole. But then, I confess that I expected no less from Michael Rutter and Lionel Hersov. I have bent over backwards to find things wrong with the book lest my encomiums not be believed. But try as I may, I am left with admiration for an extraordinary accomplishment. There are no two ways about it; this is now the definitive textbook in child psychiatry, a worthy successor to Kanner and a scholar's companion to Rutter's Penguin popular synthesis: *Helping Troubled Children*.

I do have one final quarrel with R and H. I have long been loath to undertake book reviewing; the reward has not measured up to the effort expended, at least for a compulsive reviewer who cannot bring himself to skim. This assignment, to the contrary, has been such a rewarding one that, on the principles of an intermittent schedule in operant reinforcement, I am likely to find myself persisting in behavior a rational man should foreswear. If Skinner proves to be right, R and H will be to blame.

A word about binding. The publishers have included a note cautioning the reviewer against unfavorable comments on the price in view of the enormous inflation in the cost of production. Their warning was unnecessary; I am persuaded that this book is worth every penny. But just because of its excellence, I know the reader will be turning to it constantly. For that very reason, it deserved a more durable binding than it has. Still, better a book so well written that frequent use fragments it than one so little consulted that its binding is never challenged.

LEON EISENBERG

J. Child Psychol. Psychiat., Vol. 19, 1978, pp. 71 to 86. Pergamon Press. Printed in Great Britain.

BOOK REVIEWS

Mothers: Their Power and Influence. ANN DALLY. Weidenfeld & Nicholson, London, 1975, pp. xiv + 223. £4.50.

DR. DALLY has written a curious and clever book which reads as a personal statement drawn from her own practice experience. A blend of common sense and imaginative flow make it difficult to categorise, which is of course part of its interest for the readers, if problematic for the reviewer. Some imaginative use of literature is mixed with case illustrations to outline her theory; which appears to be an amalgam of psychodynamic understanding and individual conviction.

To those familiar with the work of Melanie Klein or the clinical accounts of Donald Winnicott or Barbara Dockar-Drysdale, the theory introduced as new and original will not seem so; and in this the conflicting nature of the books' purpose may lie. It is avowedly written for the general reader and here I think it could succeed in conveying very successfully the range of ideas on which psychodynamically oriented psychiatrists may draw in their treatment of patients, although in many cases the clinical illustrations do not adequately demonstrate the preceding theoretical account. For clinicians there must be a disappointment in the lack of connection between the theory and the evidence, and between this work and the published work of others in the clinical field or child and family psychiatry. This would matter less if the author had not preceded her book with a foreword stating that it contained a framework badly needed in psychiatry, psychology education and social work.

Perhaps the book is best read as a study of a mind in original pursuit of an idea. I enjoyed following Dr. Dally's mind through her work, and I am sure her ideas will provoke others into further speculation or refutation. As a controversial book about the effect of mothers on behaviour in adult life, it should also make a very good Christmas present between spouses.

GILL GORELL BARNES

Childhood Obesity. Edited by MYRON WINICK. John Wiley & Sons, New York, 1975, pp. viii + 189. $16.95.

THE READER who looks for an answer to the basic question, "Do obese children eat more than lean?", or hopes to find in "Obesity in Childhood" a comprehensive, infallible guide to therapy, will be disappointed. What is provided, is a selective summary of studies into various aspects of this problem as considered at a conference convened to discuss this topic. The date of the meeting is not given but references later than 1973 are limited to the works of contributors to the thirteen chapters.

In the first chapter Professor Hirsch summarises the experimental data which in rats supports the hypothesis that obesity is accompanied by an excessive number of adipocytes, possibly developing as a result of excessive feeding in infancy. The factors which control adipocyte mass remain unknown. On rather poor data they conclude that until weaning there is both formation and filling of pre-adipocytes, while after three to four weeks, very few pre-adipocytes are formed. In trying to assess the relevance of these observations to obesity in humans it has to be noted that many become obese as adults and yet have excessive adipocytes. When growth, body composition and development of obesity in children are considered, it is clear that relative fatness need not be acquired early nor may it follow a consistent pattern throughout childhood and early adolescence.

From many studies it appears that to the extent that "the poor remain poor and the affluent, affluent" there is a lifelong consistency of relative fatness in the male. In the female, however, the lean poor girl may well become the impoverished obese woman. It is clear that although it has become almost accepted that the fat infant is well on his way to becoming the fat adult, conformatory data from longitudinal studies still do not exist and cross-sectional studies are both confusing and conflicting. In general, the degree of fatness has a positive relationship to income but the reverse is paradoxically so in the adolescent female.

In the second part of the book, obesity is considered during critical periods of growth. In considering the infantile period, it is stated that there may be a genetic predisposition but in no study are all other factors adequately controlled. Positive correlations were shown with excessive maternal weight gain both in pregnancy and in post-natal life, brain damage and bottle feeding, as compared with breast feeding. Surprisingly, a history of infection early in life often is followed by obesity. It is postulated that this may be an over-reaction by the parents, leading to over feeding and thus obesity. In discussing obesity during childhood, Jean Mayer emphasised again how very precise the control of intake over expenditure is in the vast majority. Only a 3% excess of caloric intake is required to add, in the average child, 10 additional pounds per year. She reported further data which supported a genetic factor in obesity in that obesity was related to biological parents rather than to adopted parents.

When the juvenile with obesity is studied it becomes clear that psychological factors largely determine hyperphagia. Cues for eating are external and learned and not related to any recognised endogenous factor.

The third part of the book bears the title "Early Nutrition and Lipid Metabolism". The first chapter is an erudite discussion of the diagnosis and management of hyperlipidemia as a paediatric problem but does not direct itself to the topic in hand, while the other two chapters deal with atherosclerosis providing some horrific figures for the incidence of very high serum cholesterol levels in children in the United States of America and in South Africa. The author has examined the evidence which suggests that a diet low in saturated fats and supplemented with unsaturated fats, may be advantageous but as yet there is no hard data to support such a radical change in diet.

Much of the impact of Chapter 9 is lost since I fear the histograms were prepared in colour for slide projection but are incomprehensible in black and white reproduction.

The final section of the book deals with the control of obesity. In the first section, basic concepts are considered developing the hypothesis that in the obese there is an increase in adipose cell number with varying increments in adipose cell lipid content. There is the suggestion that for treatment of obesity to be effective, dietary intervention must be instituted prior to the development of the hypercellular state.

The authors report a study of $3\frac{1}{2}$ years' duration of subjects aged 2–26 years. At all ages studied, the obese had a greater number of adipose cells but obese children had larger adipose cells than non-obese children and the size often overlapped the size of adipose cells in the adult. Their studies suggested that in the obese child there was a rapid increase in cellularity occurring by the age of 7 years while in the non-obese there seemed to be little increase in adipose cell counts between the age of 2 and 8. Weight reduction after the acquisition of excessive cells causes a reduction in cell size. It is hypothesised that early weight reduction by the age of six years may slow down the rate of increase of hypercellularity. The author introduces evidence that Epinephrine causes a diminished lipolytic response in cells from individuals who have been obese whether or not they are in fact overweight at the time of testing. It is suggested that this may be one of the mechanisms for genetic obesity if it does exist in man, and that early identification of abnormal growth and metabolism of fat depots coupled with therapeutic intervention prior to the attainment of a hypercellular state offers a better hope for prevention and treatment of obesity than the current multitude of dietary regimens aimed at calorie restriction.

Perhaps the most interesting section of the book deals at the attempts to treat childhood obesity by behaviour modification reported by Jordan and Levitz. It is clear that in Western society childhood eating is determined not by physiological needs but by external cues, often provided by the parents. In addition, food is often used to reinforce desirable traits and also may come to satisfy multiple emotional needs because of the association of pleasant experiences. In an effort to modify such fixed patterns of behaviour, the authors reject trying to change these in an all or none fashion thereby causing much frustration, but rather suggest that a behaviour modification programme aimed at slowly decreasing caloric intake, and increasing energy expenditure may be more effective in the long term. Human feeding should be recorded considering four major parameters: ingestive behaviour, including the type of biting, chewing, and so on; organismic variables such as hunger or mood; behaviours or activities associated with eating; stimuli preceding or concurrent with eating, e.g. time, place, associated persons, type of food, etc. On the basis of such detailed records it is possible to identify behaviours which lead to increased caloric intake. If these are correctly identified and assessed, it is possible by minor modifications to make a radical change in the total pattern of calorie intake. This approach has been validated in adults and in this report the author records some of the experiences in treating a small group of children. To treat children, three modifications were necessary: first, both parents and children were instructed in the programme and procedures of behaviour modifications, secondly, the treatment team and the children ate together once a week in an effort to model and reinforce appropriate eating behaviour, finally, the rewards provided when weight loss occurred were chosen to encourage desirable behaviour, for example, activities which would increase physical activity.

They do no more than claim that such an approach to management is feasible and promising. However, further follow-up would be necessary to confirm that this would not be just a short-term success. So many of the other measures which have been introduced to deal with this difficult problem have not been continued when the programme has been stopped. Hormones are rejected as not being of any value in the treatment of obesity.

This book gives a reasonable summary of the present state of confusion existing both in the definition of obesity and in understanding its pathogenesis and appropriate management. There can be no doubt however, that childhood obesity is a significant health hazard and causes much unhappiness. The thirteen chapters with almost 300 references pose many questions and propose innumerable hypotheses into what drives man to eat. The book should promote more studies to explore the validity of these hypotheses and hopefully will produce a few aimed at finding what stops excessive eating.

Alex P. Mowat

Case Studies in Classroom Management. David Galloway. Longman, London and New York, 1976. pp. xxx + 123. £2.25.

The author is a practising educational psychologist and the contents reflect the variety of problems that may be referred to the School Psychological Service. Interestingly though many of the solutions to these problems are placed not in the hands of psychologists and other outside agents, though the importance of co-operation and early referral where necessary are stressed, but in those of ordinary class teachers. These teachers it is argued "have found ways to help children with intransigent learning and behaviour problems without labelling them ESN or maladjusted, and without removing them to a special school".

The form of this book is unusual, consisting of the presentation of thirty imaginary case studies drawn from all ages of school children and representing a wide range of problems. Galloway has chosen several types of learning problems and a variety of emotional ones, dealing with situations both at home and school as well as some familiar conduct disorders. Drawing on a special field of interest he has included several cases based on different forms of truancy and a few which centre on the integration of partially handicapped children into ordinary schools.

In order that readers will focus on what the author sees as the basic issues, each study is preceded by two or three main points. The case is then presented in about 1000 words of clear jargon-free writing which sketches in background detail, describes the problem, details any treatment and where appropriate, reports on progress. This is then followed by 12–14 wide ranging questions designed to encourage relevant discussion.

The form of the book makes it ideal for College and Institute of Education seminars, but it should also be useful reading for anybody connected with schools and with the many problems that can be faced by children. Ideally though, because it focuses so much on the handling of individuals, it should be read in conjunction with Michael Marland's 'The Craft of the Classroom' which deals with the teachers' relationship with the class. The skills of dealing simultaneously, yet in a sensitive and imaginative way, with both individuals and the main teaching group are not easily learned.

I think teachers will like the active role proposed for them in this book, though they may find the task of teasing out the complex influences of individual, home and school somewhat daunting.

Peter Mortimore

Young Fluent Readers. Margaret Clark. Heinemann Educational Books, London. 1976. pp. x + 115. £1.70.

Although this work replicates in part that done on precocious readers by Dolores Durkin in the 1960s, it stands in its own right as a useful contribution to our meagre knowledge of successful reading in school children. The correlates of reading failure have been exhaustively reported and a whole range of them, from cerebral dominance to social class, has been in and out of fashion over the years. Clark's thirty-two subjects were all reading fluently and with understanding on admission to school at the age of five, and it is salutary to note that not all were of superior intelligence, over a third had difficult births and a quarter had parents who left school at the earliest opportunity. Large families, below-average visual discrimination, mixed handedness, poor motor coordination are recorded for numbers of these children; and blissfully unaware that they were "at risk" they learned to read before the experts got their hands on them. A lucky escape indeed!

This study is reported with a welcome conciseness: the index, indeed, is positively frugal. A much more extended discussion of the findings and their implications would have been welcome. Much current remedial practice is based on a simplistic viewing of the correlates of reading failure. There is enough evidence in this and other studies of precocious readers to prompt a change of direction, and this book, suitably amplified, could have had an important influence here. Or perhaps Dr. Clark is holding her fire while the ammunition mounts from her continuing longitudinal studies.

Leslie Rigley

Education and the Aims of Counselling: A European Perspective. Edited by Trefor Vaughan. Basil Blackwell, Oxford, 1975. pp. xii + 143. £4.50.

According to the legend on the dustcover, this book is intended to examine the proposition that specialist counselling is a new area of education, forming "a part of a watershed between the social systems of the past, and the uncertain, still to be defined patterns of the future" and also to examine "the various aims of counselling as it emerges out of a pattern of cultural change and educational reform in Britain and other countries in both Western and Eastern Europe". I approached this review, therefore, with interest and enthusiasm but regretfully completed the assignment with different feelings. A number of ideas and distinctions are introduced in the early pages as important topics for discussion but thereafter fail to be developed either at length or in depth. Key terms and concepts to which great weight is attached in the text—in particular, counselling and guidance—are never satisfactorily defined. They are also introduced in such a way as to make it difficult to interpret their meaning in all contexts. The differentiations which seem to emerge will probably be considered unrealistic rather than enlightening by most workers in the fields of education and counselling. Counselling, apparently, is good (low structure, non-direction, individuation); guidance is bad (indoctrination, direction, identification); developmental counselling is good; problem-centred counselling is inferior. In spite of the author's declared anti-U.S. bias in this field, these and other views appear more American than British in flavour. Similarly with non-directive counselling, which one had hoped was disappearing from both the American and British scenes in the simplistic form in which the author presents it.

The book has a secondary aim of introducing readers to systems of counselling in some European countries about which little has so far been published. In this respect it is more successful. I found the chapter on Rumania and Bulgaria particularly interesting. This is an area which the author and others might profitably expand. In general, however, it is a disappointing book which fails to live up to its promising beginning and operates at a level reminiscent of the themes and discussion which characterised the guidance conferences of the Sixties in this country.

Patrick Hughes

Seven Years Old in the Home Environment. John and Elizabeth Newson. George Allen & Unwin Ltd., London, 1976. pp. 436. £9.75.

This is the third volume in the series of studies which describes seven hundred Nottingham children growing up, and like its predecessors this work is rooted in mothers' reports gathered at home interviews. Whilst interviews, naturally, give a view of family life coloured by the mothers' attitudes these are, as the authors point out, a vital influence on the children too. The publishers blurb tends to emphasize the book's value to practitioners, but this volume will make essential and very uneasy reading for most researchers. It provides constant reminders that our usual research methods collapse the information we gather, so completely that not only are we in danger of "simplifying almost beyond recognition", but we are by then (i.e. after analysis) all too often in a position of logical no-return, unable to make best use of our findings. When at the outset of a new study we sample from a universe of variables we can only do so from within our own experience, although we tend to regard this, together with 'knowledge of the literature' as sufficient. This is the kind of work that gives a much needed sampling frame for variables. The richness of its material will also help to save us making fools of ourselves with, for example, the "rather glib and simplistic idea that educational and emotional deprivation both increase equally towards the lower end of the social scale", and with the usual simplified ideas about birth order effects.

Two small irritations are that not all footnotes are fully referenced in the bibliography, and that it would help to know a little more about the mothers—I confess that my view of 'student psychologist's wife' changed when I discovered her to be "highly educated"!

We can look forward not only to the work on the experience of school but also to the longitudinal perspective, which is promised when the children reach fifteen years, and in the meantime, as this study progresses, we can see cultural differences emerging, and the impact on family life of the growing consciousness of self.

M. E. J. WADSWORTH

Psychological Aspects of Learning Disabilities and Reading Disorders. ALAN O. ROSS. McGraw-Hill, New York, 1976, pp. xiii + 191. £7.45.

A CURSORY glance at the voluminous American literature on learning disability will quickly convince the discerning reader that the whole area suffers from ill-conceived and poorly executed studies of ill-defined groups of children. That some children do have learning disabilities is not in doubt. How to identify such children and how to help them remains largely unclear—unclear, that is, until the appearance of texts such as this excellent one by Alan Ross.

Whilst Ross never quite gets down to the thorny problem of providing an operational definition of learning disability (partly because he ignores British work in this area), he nevertheless goes a long way towards achieving his stated aim of linking research findings to classroom practice. He provides a useful historical overview of the development of the concept of "learning disability" in America, and demonstrates how the concept of "minimal brain dysfunction" has little practical utility.

As befits an applied psychologist, he looks to psychological processes to find explanatory models for learning problems. He starts from Gagne's analysis of learning, and concludes that whilst the total process may be interrupted at many points on the chain, two links are worthy of especially close scrutiny. There are the processes of motivation and the process of selective or focused attention, as discussed by Berlyne.

Ross particularly discusses selective attention as being the psychological process most frequently implicated in studies of children with learning difficulties. He reviews recent empirical studies and concludes that this is indeed a developing characteristic, which is delayed in children with learning disorders. A better understanding of how children learn to focus their attention and how they learn to inhibit their distractibility should lead to more valuable methods for effective intervention.

In the meantime, Ross comes down strongly in favour of phonic methods as being the best thought out ways of introducing children to reading. Adding techniques from behaviour modification to motivate children in the way that Staats has demonstrated, and Ross suggests that we already possess powerful techniques for teaching poor readers.

Overall, this is a very well-organized and well-written text which covers a great deal of ground succinctly but interestingly. Ross adopts the stance of an applied child psychologist and with his broad social learning theory background he demonstrates that the applied scientific approach is a powerful model for analysing difficult subject matter. This deserves to be a widely read book and should become very influential. It is strongly recommended to all applied psychologists, remedial teachers and other professionals interested in helping children with learning disabilities.

WILLIAM YULE

Residential Treatment and its Effects on Delinquency (Home Office Research Studies, No. 32). D. B. Cornish and R. V. G. Clarke. H.M.S.O., London, 1975. pp. v + 73, £1.00.

Residential care for children has been a long-term concern of many psychiatrists, social workers and psychologists. In view of the considerable changes it imposes on children, both in terms of the environment as well as in personal relationships, it is perhaps surprising that it has not been subject to more evaluation, whatever the difficulties (Tizard *et al.*, 1975). Rapidly rising costs might paradoxically encourage more research in this direction.

This Home Office Study is one of a long series of research reports which merit more attention than perhaps they get. The format adopted is generally clear and brief, yet impressively comprehensive, stimulating and cheap. Their subject matter may be confined to delinquency or crime but the issues raised are frequently relevant to other areas of professional interest.

The research reported in this particular study extended over a period of 8 years (1965–1973) and included a 2-year follow-up period. It attempts to evaluate primarily two forms of "treatment" at an Approved School (Community Home). Two hundred and eighty boys took part in the research, although 68 moved on to further placements and therefore did not complete their training or "treatment" at the school.

Attention is concentrated mainly on the 86 delinquents residing in the Experimental House (E), established as a "therapeutic community" (Rapoport, 1960), and on a further 87 delinquents in the Control House (C). The regime at House E emphasized democratic procedures, informality in relationships between staff and boys, and tolerance of a wide range of behaviour to allow "acting out". House C was run on more traditional Approved School lines with "a clearly defined system of rewards and punishments based on extrinsic motivation, and a belief in the importance of habit training and character development through obedience".

Boys for both these houses were selected on criteria presented by staff at House E as suitable for admission to their "therapeutic community". They were then allocated randomly (with some limitations discussed by the authors) to either House E or C. Those considered not eligible on House E staff criteria were placed in a third house. They tended to be less intelligent, more retarded in their reading and to come from larger families.

The reconviction rates from all three houses were remarkably similar—House E 70 per cent, House C 69 per cent and the third house 68 per cent. These failure rates are in line with previous findings and provide no evidence of any significant change in delinquent behaviour which could be attributed to the form of treatment or training given. While the problems in conducting this research were many and inevitably imposed some modifications on the data (as the authors recognize), there would seem to be little grounds for expecting a more favourable outcome, had it been possible to resolve them.

The authors consider that there has been an over-emphasis on personality factors in delinquency, without sufficient regard being given to situational determinants. They favour a closer analysis of delinquency and its treatment (residential and non-residential) on these lines, adopting a social or environmental/learning theory approach (Mischel, 1968, 1973).

Irrespective of the issue of efficacy, there will, of course, always be a need for some residential provision for some children. However, the authors' conclusions cannot be avoided—"The extent to which institutions can or do perform the functions of care, custody and deterrence satisfactorily (or indeed cost-effectively) should now be the subject of empirical investigation".

This publication should be read with interest by both professional and research workers. Its findings may be unwelcome to some who have worked (like the reviewer) in residential establishments and are aware of the long and arduous hours staff at all levels give to delinquents and others. However, that is no justification for burying one's head in the sand! R. Maliphant

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The Early Identification of Educationally "at risk" Children. Edited by K. Wedell and E. C. Raybould. *Educational Review* Publication No. 6. University of Birmingham, Birmingham, 1976 144 pp. £2.50.

Symposia when published tend to be like yesterday's supper, of little interest even to last night's guests. This one is a remarkable exception. The symposium itself must have been tightly planned, not only in terms of the content to be covered but in the choice of participants. It has certainly been tightly edited. The result is one of the best statements of knowledge, practice and doubt in a very important field of applied educational psychology.

The papers are organized in three groups—those broadly concerned with concepts and aims; a section dealing with psychometric approaches, particularly to screening; and a concluding quartet of papers dealing with some examples of implementation. Each of the three sections is followed by a short summary of what must have been lively discussions.

It is difficult to single out individual contributions, but the papers in Part I (Concepts and Aims) each in their several ways make clear both the urgency of the problem of early detection and the gap which opens between statistical probabilities and the specific likelihood of a particular child being truly "at risk". Stress, too, is laid upon the fact that a disability or a disadvantage does not necessarily lead to educational handicap and that there are serious dangers in the kind of labelling to which "at risk registers" and screening procedures may give rise. Generally, the problems of the lack of any kind of direct relationship between underlying processes, or skills, and actual learning in the more or less formal situations of school, of the multifactorial and "last straw" nature of much apparent causation, and of the differential effects of the equally complex factors in the school learning situation itself, emerge in considerable detail and clarity.

The contribution of Mandl on the school readiness tests still in use in Germany (and elsewhere in Europe) brings us up with a jerk. His paper demonstrates the crucial nature of the educational decisions which are, in many systems, smudged in the first years of schooling. School readiness testing is, in a sense, a harsher version of reading readiness testing, both containing the tacit assumptions that there is a set of unchangeable demands to which the child must conform, that the differences between children are due to delays in—generally linear—series of maturing abilities and that all or most children learn in closely similar ways. None of the contributors subscribes to these views, of course; and many of them are at pains—for example, Dumont, van Bon and Hoekstra and Moyra Tyson—to demonstrate the opposite. However, pedagogic method, school organization and curricula, with their strong emphasis on the normative, upon teaching in groups and upon a uniform (if not always clearly defined) set of global goals, tend very much to the situation in which the highly variable child is confronted with a relatively rigid framework of "growth tasks" or normative demands to which he must learn to conform.

It is thus of considerable interest to note here and there, in Section II, and particularly in Wolfendale and Tansley's contributions in Section III, a re-penetration of an idea which is as old as J. M. Cattell's pedagogical laboratory—the notion of diagnostic teaching based upon, and arising out of, the teacher's growing knowledge of how this or that particular child is actually tackling the tasks he meets in school. In his account of the discussion of Part III, Wedell puts this in the broad context of the whole symposium and points to the role of the expert primarily as providing two kinds of help. The first of these is the definition, by research, of conditions and factors in the individual or the environment likely to handicap development and learning of all kinds, the assessment of probabilities and the provision of tools for assessment and diagnosis. The second is more difficult. It is that of sensitizing and training the child's educators—parents and teachers—so that their natural interventions in the child's learning can be based on an accumulating awareness of his particular capacities, weaknesses or deficits, and be of a constructive and prospective, rather than a merely remedial kind.

In my view, this book on the current state of a difficult, but very important, art, should be read not only by psychologists, school medical officers and other such peripheral professionals, but by teachers at all levels, and certainly those in the First Schools.

W. D. Wall

Snijders-Oomen Non-Verbal Intelligence Scale: S.O.N. 2½–7. J. Th. Snijders and N. Snijders-Oomen. H. D. Tjeenk Willink, Gronigen, 1976. pp. vii + 60. No price stated.

Most tests of intelligence rely heavily on the spoken word for administration and language for their execution. Children with any form of language handicap are placed at a disadvantage on such tests, and deaf and partially-hearing children will clearly find verbal tests very difficult. These problems have been circumvented very unsatisfactorily by testing such children on the performance or non-verbal scales of composite tests, but this practice begs many questions.

The Snijders-Oomen Non-Verbal Intelligence Scale is one of the very few scales which have been well standardized on populations of deaf children (Ives, 1967). It is very widely used in schools for the deaf in Europe (van den Horst, 1960), but much less is known of it in Britain (Reed, 1970) or America (Levine, 1974). Therefore, in introducing this review of the revised scale, I will first describe its predecessors.

The original Snijders-Oomen Non-Verbal (S.O.N.) was published in 1943, revised in 1958, and appeared in English translation in 1959 (Snijders and Snijders-Oomen, 1959). The early scale covered the age range 4–14 yr, and was standardized on deaf children. The 1958 revision extended the range from 3 to 16 yr, and data were available on 1355 hearing children as well as 1054 pupils in schools for the deaf in the Netherlands.

The 1958 version contained eight subtests, arranged in four groups—Form, Combination, Abstraction and Memory—forming two parallel forms of the scale. Gaskill *et al.* (1970) used that scale with children attending three schools for the deaf in Britain. They found that the British children scored means of 107·8, 100·0 and 105·5 in the three schools, somewhat higher than the standardization mean of 100. However, they do not comment on how children are selected for the schools, so this may not mean that the test overestimates intelligence. Of equal relevance is their finding that scores on the S.O.N. correlate highly with scores on other intelligence tests. They tested 50 children in one school and 16 in another and report correlations of 0·80 and 0·85 with Raven's matrices; 0·83 and 0·77 with W.I.S.C. Performance Scale; 0·83 and 0·72 with Colins and Drever Scale. Thus, in one of the few empirical studies to examine the value of the S.O.N. in British schools for the deaf, the scale compares favourably with other measures. Therefore, it is important to examine the new version carefully.

In revising the scale, it was decided to construct two scales, this one for ages 2½–7 yr, and an older version for ages 7–17 yr. The scale for younger children consists of five subtests, the content of which has been chosen to be more acceptable to young children and has been adapted as a result of empirical studies. The five subtests consist of Sorting (both objects and pictures); Mosaics (copying patterns, but no longer timed); Combination (placing jig-saw pictures together); Memory (finding a hidden object); and Copying (drawing simple designs). Instructions for administering subtests to both deaf and hearing children are clearly presented, as are the criteria for scoring.

The rules for converting the raw scores into mental ages and I.Q.s are complicated. Care has to be taken to enter the correct tables in the correct sequence. Separate norms are provided for Hearing and Deaf children.

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PATRICIA HOWLIN

The Grasp of Consciousness. J. PIAGET (translated by S. WEDGWOOD). Routledge & Kegan Paul, London, 1977. pp. v + 360. £8.50.

I DO WISH that somebody of Piaget's intellectual stature and imaginative power would turn his attention to the psychology of creativity in old age. Why is it, that certain people retain their creative energy into an age with which one more frequently associates intellectual decline? Is it true that there are particularly many great old artists? Fairly recent examples which readily come to mind include Picasso, Chagall, Stravinsky, Casals and Klemperer. Is the reason simply that old scientists are denied access to most of our age-phobic scientific institutes while artists are allowed to continue working? Alternatively, are Piaget's qualities as much those of an artist as those of a scientist? Whatever the answer to such questions, this is a brilliantly original book. If Piaget had done no more during his working life, than to rescue consciousness from the oblivion to which psychologists have condemned it for more than half a century, he would have deserved our acclaim.

In order to make consciousness accessible to experimental investigation, Piaget proposes an operational definition in terms of the awareness of and ability to account for one's actions. After being concerned in all his previous work with the analysis of why children cannot carry out certain operations, he now turns his attention to those things they can do. However, the children's awareness of how they did these things lags far behind their ability to do them, and this applies to an activity such as crawling on hands and knees, as much as to an operation such as seriation. In fact, what children thought they had been doing was often quite different from that which they had actually done. Piaget finds that the first awareness is of the goal and of the results of the action in terms of success or failure. The means which were used to effect this, regardless of how appropriate they may have been, may remain unconscious.

Reminiscent of his previous definitions of images and language as internal representations which have to be constructed on the basis of previous actions, Piaget concludes that consciousness is not like a torchlight which is suddenly switched on to illuminate, and thereby to transform, actions. At first consciousness is linked to immediate perception and fades rapidly. But this stage of awareness becomes gradually integrated with those states that preceded and follow it within some system of representation. As reality is interpreted and conceptualized, consciousness can operate on these internal representations. This leads from mere awareness of ongoing action to considerations of potentially possible ones.

The experimental situations which provide the results for these conclusions are as imaginatively conceived as one would expect from this old master of his art. Children play tiddlywinks, build roads up hills, make balloons fly and construct Hanoi Towers. To the predictably intense irritation of his Anglosaxon colleagues, Piaget incorrigibly presents his results, as often before, in the form of excerpts from the children's accounts of their actions in relation to these situations. Let us hope and pray that this time this will not again inspire these colleagues to spend their time and our money in the mindless replication of all these studies in what they are pleased to call "properly controlled conditions". In this country at least, Piaget's work up to date has mainly served to provoke countless efforts from developmental psychologists to either confirm or contradict his findings and conclusions. Instead of continuing attempts to prove that certain children in certain circumstances are able to do certain things at 4½ instead of at 5 years of age, as Piaget had mistakenly claimed, we should use this marvellous book to give us a much needed impetus for new directions and orientations in developmental research. It will be our subjects' loss if we continue to misuse Piaget's insights by regarding them as no more than occasions for either partisanship or counter-revolution, instead of using them as a springboard for original and creative work of our own.

BEATE HERMELIN

Children's Hearings. Edited by F. M. MARTIN and KATHLEEN MURRAY. Scottish Academic Press, Edinburgh, 1976. pp. xv + 242. £5.00 hardback, £3.75 paper.

Face to Face with Families. N. BRUCE and J. SPENCER. MacDonald, Loanhead, 1976. pp. 184. £5.50 hardback, £2.75 paper.

THESE two books are the first to be published on the new system of juvenile justice in Scotland, 5 years after its inception in 1971. The Social Work (Scotland) Act 1968, which led to the changes, had a number of aims. One was to avoid dealing with persons under 16 in the courts, another was to separate the process of establishing the facts from that of disposal or treatment of the juvenile, and a third was to create a new criterion for disposal, namely "the best interests of the child". A new class of official was introduced, namely the "Reporter", whose job it was to deal with juveniles referred as being "in need of compulsory measures of care", usually because they had committed offences. If the Reporter agreed with the referring agency (usually the police) that the juvenile was in need of compulsory measures of care, he would refer the juvenile to a relatively informal "children's hearing", in which a lay panel would choose a course of action which was considered to be in the best interests of the child. In practice, the hearing could decide to take no further action, to impose a supervision requirement, or to require the juvenile to reside in a residential establishment such as a "List D" school.

There are many other aspects of the system of children's hearings beyond the bare bones outlined above and the major contribution of these two books is to describe these in detail. Most of the chapters in the book edited by Martin and Murray are factual, informative descriptions of the various elements making up the new system, by persons who "have been closely identified with the development of the hearings system, having worked within it either as panel members or as associated professionals" (p. xiv). A minority of chapters are rather more general, such as A. R. Forrest's review of theories of delinquency and Janet Hassan's discussion of interviewing, communication and decision-making. I did not find these chapters particularly informative, but they might be of interest to children's hearing panel members, for whom the book seems to have been primarily intended. The book by Bruce and Spencer is much more impressionistic, being based on questionnaires completed by panel members, observation of children's hearings, and interviews with social workers, Reporters and a smattering of policemen, sheriffs, headmasters, guidance teachers, psychiatrists and psychologists.

It seems to me that two important issues need to be resolved in connection with the system of juvenile justice in Scotland, and these are also quite relevant to the system in England and Wales. First of all, although the rhetoric and philosophy underlying the new Scottish legislation concentrates almost exclusively on the needs and welfare of the child, one wonders what happens in practice and how it is perceived by the juvenile, his parents, and society as a whole as well as by those administering the system. Second, one wonders what the effect of the new system is on the juvenile crime rate, and why. The new legislation seems to be based on certain theories about the causes of crime and the treatment of offenders, so presumably one might expect the new system to be successful in reducing crime only in so far as these theories are correct.

Neither of these issues is discussed to my satisfaction in these two books, although there are many relevant and thought-provoking sections. Beginning with the first issue, D. Watson (Martin and Murray, p. 205) argues that "far from being a system designed to further the best interests of the child, the range of disposals available shows that in fact it is designed to further the best interests of others". G. Gordon (Martin and Murray, pp. 24–25) argues that in practice the dichotomy between prosecution and referral to a hearing is more nominal than real, and that prosecution may be more favourable to a child than proceedings by a hearing. C. Godwin (Martin and Murray, Chapter 11) documents some interesting violations of the rules of procedure in children's hearings, and Martin and Murray (p. 131) note that "the decision to place a child in a residential establishment . . . is commonly seen by him as punitive".

The second issue is rarely mentioned. F. M. Martin (Martin and Murray, Chapter 3) discusses some statistical evidence and concludes (p. 40) that "we have very little systematic knowledge of the consequences of decisions and disposals. . . . The research required for any such demonstration is likely to be both difficult and time-consuming, and it is to be hoped that the necessary plans can be formulated in the near future". Bruce and Spencer (Chaper 5) try to evaluate the system on six criteria, but these do not include its effect on the juvenile crime rate.

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Children's Hearings. Edited by F. M. Martin and Kathleen Murray. Scottish Academic Press, Edinburgh. 1976. pp. xv + 242. £5.00 hardback, £3.75 paper.

Face to Face with Families. N. Bruce and J. Spencer. MacDonald, Loanhead, 1976. pp. 184. £5.50 hardback, £2.75 paper.

These two books are the first to be published on the new system of juvenile justice in Scotland, 5 years after its inception in 1971. The Social Work (Scotland) Act 1968, which led to the changes, had a number of aims. One was to avoid dealing with persons under 16 in the courts, another was to separate the process of establishing the facts from that of disposal or treatment of the juvenile, and a third was to create a new criterion for disposal, namely "the best interests of the child". A new class of official was introduced, namely the "Reporter", whose job it was to deal with juveniles referred as being "in need of compulsory measures of care", usually because they had committed offences. If the Reporter agreed with the referring agency (usually the police) that the juvenile was in need of compulsory measures of care, he would refer the juvenile to a relatively informal "children's hearing", in which a lay panel would choose a course of action which was considered to be in the best interests of the child. In practice, the hearing could decide to take no further action, to impose a supervision requirement, or to require the juvenile to reside in a residential establishment such as a "List D" school.

There are many other aspects of the system of children's hearings beyond the bare bones outlined above and the major contribution of these two books is to describe these in detail. Most of the chapters in the book edited by Martin and Murray are factual, informative descriptions of the various elements making up the new system, by persons who "have been closely identified with the development of the hearings system, having worked within it either as panel members or as associated professionals" (p. xiv). A minority of chapters are rather more general, such as A. R. Forrest's review of theories of delinquency and Janet Hassan's discussion of interviewing, communication and decision-making. I did not find these chapters particularly informative, but they might be of interest to children's hearing panel members, for whom the book seems to have been primarily intended. The book by Bruce and Spencer is much more impressionistic, being based on questionnaires completed by panel members, observation of children's hearings, and interviews with social workers, Reporters and a smattering of policemen, sheriffs, headmasters, guidance teachers, psychiatrists and psychologists.

It seems to me that two important issues need to be resolved in connection with the system of juvenile justice in Scotland, and these are also quite relevant to the system in England and Wales. First of all, although the rhetoric and philosophy underlying the new Scottish legislation concentrates almost exclusively on the needs and welfare of the child, one wonders what happens in practice and how it is perceived by the juvenile, his parents, and society as a whole as well as by those administering the system. Second, one wonders what the effect of the new system is on the juvenile crime rate, and why. The new legislation seems to be based on certain theories about the causes of crime and the treatment of offenders, so presumably one might expect the new system to be successful in reducing crime only in so far as these theories are correct.

Neither of these issues is discussed to my satisfaction in these two books, although there are many relevant and thought-provoking sections. Beginning with the first issue, D. Watson (Martin and Murray, p. 205) argues that "far from being a system designed to further the best interests of the child, the range of disposals available shows that in fact it is designed to further the best interests of others". G. Gordon (Martin and Murray, pp. 24–25) argues that in practice the dichotomy between prosecution and referral to a hearing is more nominal than real, and that prosecution may be more favourable to a child than proceedings by a hearing. C. Godwin (Martin and Murray, Chapter 11) documents some interesting violations of the rules of procedure in children's hearings, and Martin and Murray (p. 131) note that "the decision to place a child in a residential establishment . . . is commonly seen by him as punitive".

The second issue is rarely mentioned. F. M. Martin (Martin and Murray, Chapter 3) discusses some statistical evidence and concludes (p. 40) that "we have very little systematic knowledge of the consequences of decisions and disposals. . . . The research required for any such demonstration is likely to be both difficult and time-consuming, and it is to be hoped that the necessary plans can be formulated in the near future". Bruce and Spencer (Chaper 5) try to evaluate the system on six criteria, but these do not include its effect on the juvenile crime rate.

To summarize, the two books are quite illuminating and informative, but can only be regarded as a start in the direction of evaluating the new Scottish system of juvenile justice.

DAVID P. FARRINGTON

Interaction in the Classroom. SARA DELAMONT. Methuen, London, 1976, pp. vi + 113. Hardback £3.00. Paperback £1.40.

THIS IS part of a new series *Contemporary Sociology of the School* consisting of 10 short books using analyses which are based on interpretive theories. They set out to question assumptions, particularly those of traditional sociologists. Within their framework the reality of the school is seen to be socially constructed by the participants, each of whom have different roles and varying amounts of power.

In the first chapter of this book Sara Delamont, a symbolic interactionist, carefully lays out the framework of analysis that she uses. This theoretical position, largely derived from the ideas of G. H. Mead, sees humans as reflexive beings interpreting the world in the light of their own roles and experiences. The implication for research is for participant rather than objective observation and for the interpretation of data according to the insights and feelings of the actors rather than those of the researchers.

The author discusses the setting of the classroom, located not only in time and space but also in an institutional and educational context, and then proceeds to describe the pupils and the teachers. Here the book, which up to now has been both highly readable and thought provoking, is disappointing.

Pupils and teachers are described as protagonists, and conflict is seen as underlying all negotiations between them. The examples are mostly from secondary schools, thus ignoring the quite different negotiations of primary schools, and too many are from St. Luke's, the Scottish girls' school where the author carried out participant observations. As a result the quotations from pupils bear greater resemblance to the world of Jean Brodie than to that of inner city comprehensives.

Some of the material on teachers is better, in particular the importance given to the three concepts of privacy, immediacy and autonomy, and the discussion of the relationship between knowledge and control. However, the reader may feel that Sara Delamont is, if not anti-teacher, then at least unsympathetic. There are few examples of good practice, of successful class projects, of teachers acting as consultants to groups of pupils or of joint artistic achievement.

The chapter that deals with interactions between the two groups is called "Let battle commence . . .", which reflects the author's view of all interaction as negotiations in a struggle for power which, as most teachers know, is certainly a feature of classroom life but not thankfully, to the exclusion of everything else. The final chapter briefly suggests four ways in which research on classrooms could be improved.

This book offers an interesting analysis, is well written and reviews an impressive number of recent studies though, unfortunately, no reference is made to the work of Harré at Oxford or Reynolds at Cardiff, both of whom would have strengthened the author's argument.

PETER MORTIMORE

The Delinquent Way of Life. D. J. WEST and D. P. FARRINGTON. Heinemann, London, 1977. pp. ix + 209. £6.00.

THIS is the third report by the authors on delinquency in a sample of 411 working-class boys in a London area. They were first interviewed in 1961–1962 at age eight and have now been followed up for 14 years. The data presented are largely focused on information obtained from the 389 boys who were interviewed again when they were 18 (1971–1973).

Anyone who has been engaged in survey work of this nature will be sensitive to the problems of presentation—how to inform without mentally killing off the reader in the process of assimilation! The authors are generally very successful in helping him to survive, although a leisurely approach to each of the nine short chapters is nonetheless recommended. The statistical analyses are kept simple by design (Chi-square) since the authors regarded their data unsuitable for more sophisticated treatment (p. 184). However, some further teasing out of the inter-relationships between the variables, which range from "hard" measures to "soft" ratings, might have proved useful.

By 1974, 30·8% of the slightly reduced sample had become delinquent. Official crime records and self-admissions were examined and found to be closely associated. In terms of family factors and personal characteristics, most expectations are confirmed. The delinquents had poorer competence educationally, poorer job records, drank heavily, smoked more and were generally more aggressive, paying little regard to their future prospects. Much earlier assessments of "troublesomeness" by teachers and peers were good predictors of subsequent delinquency.

With the exception of parent–child rearing practices, large families, low intelligence and parental criminality were all closely associated with delinquency as previously reported. Criminal behaviour in the family was related to delinquency even where in some cases the parent's conviction pre-dated the boy's birth. Eighteen families (4·8%) accounted for nearly half of all convictions (581 out of 1217, p. 111)! Such families, of course, manifested other problems besides delinquency.

Tentative evidence is offered suggesting that conviction itself can, in some way, contribute to deterioration and not to improvement in behaviour. Some confirmation of previous work on autonomic reactivity, as measured by pulse rate, is also presented. The differences between delinquents and non-delinquents could have been reduced artifactually since the pulse counts were taken toward the end of the interview when stress would presumably have been reduced (Davies and Maliphant, 1971; Wadsworth, 1976).

The book is a strong statement supporting the existence of real personal differences between delinquents and their non-delinquent peers. As the authors suggest (without ignoring the broader social context), there is a need now for more specific and experimentally designed investigations in this vast, multi-faceted area of delinquency.

R. MALIPHANT

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Rage, Hate, Assault and Other Forms of Violence. Edited by DENNIS J. MADDEN and JOHN R. LION. Spectrum Publications, New York, 1976. pp. 265. £14.50.

AT LONG last the study of overt human violence is reaching take-off point. As always there are more research developments on the western side of the Atlantic than there are in Britain but everywhere the topic is a focus of serious discussion. It is difficult to know where psychiatry should enter into the discussion but, as one of the editors of this recent collection of papers reminds us, aggression has occupied a central place in psychiatric thinking for a long time and some forms of violence are pathological. The danger is that alluring psychiatric notions will be used to explain ordinary fighting, wars, and all other kinds of normal violence.

This volume does not fall into the trap of equating violence with pathology even though one of the editors is a psychiatrist and six other MDs contributed to it; a balanced multi-disciplinary style is preserved throughout. Inevitably the contributions vary in quality (how many reviewers of collected articles refrain from mentioning the curate's egg?). The subject matter ranges from child abuse and violence in the family to prediction of violence, the offender in court, therapy in prisons, non-human aggressive behaviour and treatment of the aggressive patient. British work (little though it is) is hardly mentioned. The book has no connecting theme but is a useful collection of reviews. I particularly liked Steadman on prediction, Anderson and Lupo on non-human violence, and Carney on the treatment of the aggressive patient. As I now have a free copy I am glad to include this book in my reference library but I would not have thought this book special enough to entice me to part with £14.50.

JOHN GUNN

Paediatric Care: Child Health in Family Practice. STUART CARNE. MTP Press, Lancaster, 1976. pp. xiii + 259. £6.50 (hardback).

THIS is a book written by a family doctor and intended for members of the primary health care team. It covers the whole spectrum of paediatric care in a community setting, ranging from child growth and development and infant feeding, through a wide variety of physical disorders, to very sensible final chapters on emotional troubles of children and on cot deaths.

It is a most readable book and will commend itself to family doctors and health visitors, being concise in style and containing a great deal of homely advice which is rarely to be found in textbooks of paediatrics. From the point of view of the child psychiatrist or psychologist the chapter on psychological disorder is not likely to contribute very much, but the rest of the work could prove of considerable value as a quick reference to physical disorders.

Professor Oppè, in his foreword to the book, comments that good primary care of children can sometimes save life, and often reduces anxiety and distress. *Paediatric Care* should do a great deal to promote these aims.

Douglas I. Acres

Emergencies in Child Psychiatry: Emotional Crises of Children, Youth and Their Families. Edited by G. C. Morrison. C. C. Thomas, Springfield, IL, 1975. pp. xxiv + 482. $24.50.

In his preface the Editor states that "more and more emphasis has been given to recognising the importance of early and direct therapeutic intervention in childhood crises". The purpose of the book appears to be to present views on the nature of such urgent situations and to offer guidance on management. The prime questions are whether these aims have been achieved, and perhaps for whom the book is intended.

The text is not actually "purpose written" but the Editor has collected together 30 independent papers contributed by 21 principal authors. Only seven of the chapters were specially written for the book and the others have been published elsewhere at varying times over the last 15 years. Individual chapters are grouped into four parts entitled: 1. Introduction; II. Crisis Intervention, brief treatment and early prevention; III. Clinical Experience and Research; and IV. Treatment Planning. A wide variety of topics are covered from both theoretical and research points of view, and include papers on autism, childhood depression, suicide, school phobia and adolescence.

Considered individually, the contributions vary greatly in style and standard, and it is not possible to provide a critique of each. However, some points may be picked out. The first section might have been better condensed into a single introduction. For example, Chapter 2 is concerned with a definition of emergency, but in Chapter 3, which is more research orientated, the authors state "there are no . . . generally agreed upon definitions as to what constitutes an emergency", and follow again with a discussion on possible definitions. In Section II, a chapter comparing two clinics and socio-economic groups, and another examining family tolerance, are clearer, but there seems little justification for the inclusion of both Chapters 5 and 10, each presenting a view of infantile autism by the same author. In Section III, there is an emphasis on depression and suicide and the common phenomenon of school refusal is presented in quite a good paper by Malmquist that unfortunately only deals with one management point of view. The final Section on treatment planning provides some guidance, but on the whole would be inadequate for the child psychiatrist in training who needed a reference text to turn to in an emergency. Chapter 29, for example, on drug therapy gives quite detailed comments on individual drugs, but the reader would have to turn elsewhere for any guidance on dosage.

The method of preparing a book by collecting individual papers together results in considerable repetition and an overall lack of a sense of urgency. More concise writing by a single author quoting the different works would be of greater use to the training psychiatrist. Nonetheless, the Editor has gathered together the works of authors of high repute, and for those taking a more leisurely view of the topic *Emergencies in Child Psychiatry* is worth reading and saves the effort of seeking out the original reference texts.

H. Zeitlin

Flats, Families and the Under-Fives. Elizabeth Gittus. Routledge & Kegan Paul, London, 1976. pp. xvi + 269. £5.25.

The Artisans and Labourers Dwellings Improvement Act of 1875 empowered local authorities to buy up delapidated housing and provide improved dwellings for the "poorer classes". Since then, especially after 1918, there have been extensive municipal building programmes. Currently, about 40% of all dwellings are rented from local authorities or New Towns.

There is no doubt that the quality of individual dwelling units has improved considerably, but there is much criticism of their social defects. Probably high rise buildings have received most criticism, especially concerning families with young children. *Flats, Families and the Under-Fives* reports a survey into the attitudes of mothers with young children living in local authority housing in Tyneside. The samples of families, all with at least one child under 5, were chosen from estates of differing age and housing provision.

The first part of the book describes the results of interviews with some 400 mothers. The mothers in flats, and to a lesser extent maisonettes, complain more about lack of play facilities and fears for their children's safety, and are more likely to feel nervous and lonely than those in houses; mothers with more than one child under 5 felt more stressed; floor level made little difference to the dissatisfaction felt.

A chapter reviews the various influences, such as economics and building techniques which may have led to the construction of high rise buildings and points out that savings in money and space are negligible. The last chapter discusses existing pre-school facilities and makes suggestions for improvement and more parental participation.

The book should serve as a valuable working paper for the local authority in Tyneside—it would be interesting to know if the suggestions have been implemented. It would be of value to workers in planning and housing rather than to readers of this journal.

The findings support those of other surveys but are presented in a long-winded way, with no examination of statistical significance, and do not extend our understanding of the complex interaction between environmental and social structures.

N. RICHMAN

Projective Techniques. BORIS SEMEONOFF. John Wiley & Sons, New York, 1976. pp. vii + 336. £9.95. Paper £4.95.

PROJECTIVE techniques, despite controversy about their reliability and validity, nevertheless continue to be used. Clinicians who find them a valuable adjunct to their assessments of patients often find it difficult to justify their use to the sceptical. Semeonoff's professed aim therefore to inform the undergraduate and general reader about projective techniques was welcome; unfortunately, his prolific and erudite knowledge of the field has made him quite unable to see the wood for the trees. In fact, this book is a very comprehensive source book describing in very great detail the administration, not only of the well-known Rorschach and Thematic Apperception Test, but of many lesser known and obscure techniques and their variants.

The author skilfully links the rationale of these techniques with issues of general psychological interest such as perception, learning and concept formation as well as personality assessment and selection procedures. It will therefore be very useful for any research worker looking for a suitable way of assessing a specific aspect of psychological functioning. The 427 references will lead the reader to even more detailed expositions. The academic, descriptive approach is evident in the way in which the techniques are classified: according to the kind of stimulus (visual, verbal, etc.), the kind of response (interpretation, manipulation, etc.) and the aim (description, diagnosis or therapy). The book, however, does not claim to be a clinical work; yet the almost total absence of clinical material, which might have aroused the interest of some readers and demonstrated the use of the techniques in practice, is unfortunate, especially as research studies are quoted frequently.

The book is too long and far too detailed for the general reader, but as a source book for interested research workers it will be unequalled. A simple short introductory text which combines academic interest in perception and personality with clinical experience in a way that might arouse enthusiasm and curiosity in the undergraduate remains to be written.

EVA HOLMES

Reading Tests in the Classroom. DENIS VINCENT and MICHAEL CRESSWELL. NFER Publishing Co. Ltd., 1976. pp. 185. £4.50.

Tree little milk egg book is the beginning of an incantation which has haunted teachers for over 30 years. You will recognize the first words in the Schonell Graded Word Recognition Test, standardized in 1945, still used by three-quarters of English primary schools, and perhaps not the best way of testing reading, although it has more than the ten words attributed to it by these authors (p. 156).

Teachers' coolness towards tests and testers has a long history which makes sound guides like this especially welcome.

It scores particularly highly in its awareness of staffroom sensitivities which it soothes away very competently. Further, it grasps more firmly that its predecessors the nettle which the technical bases of modern testing present, giving adequate information but steering clear of writing a statistical text book—perhaps too clear: I felt that standard deviation and reliability coefficient, for example, might repay fuller treatment. In general, however, one finds here a highly competent presentation of all those aspects of the testing of reading which are important to teachers, and one could only wish for a lower price to enable them to buy it, and for a decent index to enable them to use it more effectively.

L. V. RIGLEY

Gilles de la Tourette's Syndrome. (Vol. 1. International Registry). Edited by F. S. ABUZZAHAB and F. O. ANDERSON. Mason Publishing Co., U.S.A., 1976. pp. xi + 223. No price given.

THE SYNDROME described by Gilles de la Tourette in 1885 is rarely seen, but the bizarre nature of the symptoms (tics, vocalizations, coprolalia) which show affinities both to neurological and psychological processes, has ensured its continued presence in the literature. The success of the drug haloperidol in controlling the symptoms has provoked a wider interest and this is reflected in the work of Abuzzahab and Anderson, in establishing the International Registry.

This volume contains 20 papers and a summary of current knowledge of the syndrome. Two further volumes are promised as well as a Centennial 'Celebration' in 1985!

Analysis of the first 430 cases certainly confirms statistically Gilles de la Tourette's original description. In addition, the data show clearly that, of the many forms of treatment used, haloperidol is the most successful. Yet, how much deeper is our understanding of the syndrome than that of Gilles de la Tourette in 1885?

Many papers, while presenting fairly detailed case histories, are concerned with showing the effectiveness of haloperidol. Only two papers present material on non-drug treatment. One, on social aspects of the syndrome, is barely intelligible (poor translation?) and the other, on paraverbal (sic) psychotherapy, relates to one patient studied in an in-patient setting.

The contributions by Corbett and Knopp and Strayer provided the most stimulating reading. By acknowledging the existence of social and psychological factors, with their relevance to treatment, they give hope that investigation of this complex syndrome will not end with the administration of haloperidol.

DIANE LUKEMAN

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A Lifetime of Learning. A Survey of Further Education Facilities for Mentally Handicapped Adolescents and Adults. Eileen Baranyay. NSMHC, London, 1976, pp. 72. £1.30.

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The International Association for Child Psychiatry and Allied Professions will hold its 9th International Congress in Melbourne, Australia, 19–26 August 1978. The theme of the Congress will be "Children and Their Parents in a Changing World".

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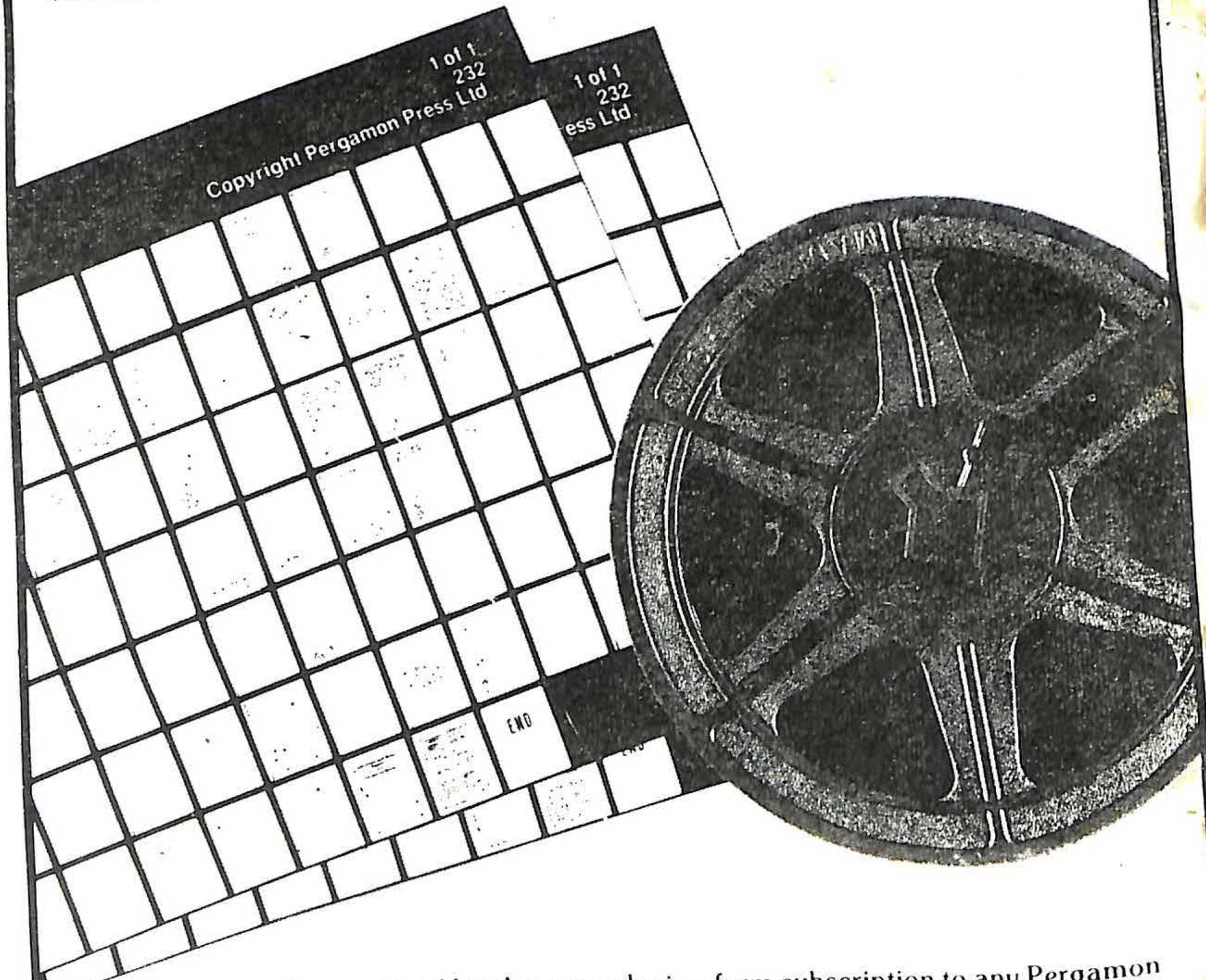

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family therapy, child patient,
brief focal therapy, clinical

ntovim, Arnon and Kinston, Warren (1978) Brief focal family therapy when the
ld is the referred patient—I. Clinical. *J. Child Psychol. Psychiat.* **19,** 1–12.

mmary—The development of a method to carry out time-limited focused work
th families is briefly described. Two case examples are provided to demonstrate the
ocess of formulation of dynamic hypotheses, the development of operational plans for
rapists, and the changes in the family with therapy. The value of the method and the
portance of the workshop where it is being fostered and documented is discussed.

stimulant effects, interaction,
hyperactive children, mothers

umphries, Thomas, Kinsbourne, Marcel and Swanson, James (1978) Stimulant
ects on cooperation and social interaction between hyperactive children and their
others. *J. Child Psychol. Psychiat.* **19,** 13–22.

mmary—Twenty-six hyperactive children and their mothers collaborated on a
ntour tracking task with acute administration of stimulant (methylphenidate) and
acebo in a double-blind design. The dyad performed significantly better when the
ild was in the medicated state. Aspects of the quality and quantity of interaction
tween mother and child were noted. In the medicated state, the child directed the
other more and in a more positive fashion, while the mother behaved in a less con-
olling way and also more positively. We conclude that in the medicated state, a more
vorable interaction is established, permitting less constrained learning on the part of
e child. The findings make it unlikely that the controlling behavior of mothers of
peractive children is anything other than a response to the way their children act.

malnourishment, intelligence,
Nigeria, McCarthy Scale

Ashem, Beatrice and Janes, Margaret D. (1978) Deleterious effects of chronic
nutrition on cognitive abilities. *J. Child Psychol. Psychiat.* **19,** 23–31.

Summary—The McCarthy Scale of Abilities was administered to 118 Ni
children between the ages of $2\frac{1}{2}$ and 6 yr who came from "well-to-do" urban and "
urban and rural environments. The "poor" groups were sub-divided into the "R
ably Nourished" and the "Malnourished" on the basis of their physical growth
The "well-to-do" group served as the "Well-Nourished" control. The "Well-Nour
group scored significantly higher than the "Reasonably Nourished", the latt
nificantly higher than the "Malnourished", on the G.C.I. and all sub-scales. It w
that future remedial measures should try to improve hygiene, sanitation and co
stimulation as well as nutrition in "poor" groups.

families, parental attitudes,
family assessment, child psychiatry

Churven, P. G. (1978) Families: parental attitudes to family assessment in a
psychiatry setting. *J. Child Psychol. Psychiat.* **19,** 33–41.

Summary—Although family assessment is widely regarded as an important as
child psychiatry practice, psychiatrists often doubt parents' readiness to participat
attitudinal and behavioural data in this study suggest that the majority of paren
participate in family assessment if specifically invited. Most of those who fail to
clinic may cooperate in their home setting, out of working hours.

measures of sex-role identity,
cross-cultural, pre-school children

USH, LORELEI R. and GOLDBERG, WENDY A. (1978) The intercorrelation of measures sex-role identity. *J. Child Psychol. Psychiat.* **19,** 43–48.

mmary—To examine the consistency of their sex-role identification, 122 preschool ildren were given seven measures which are frequently used to evaluate this dimension personality. The degree of sex-typing of the children on any one measure was not ongly related to the degree of sex-typing demonstrated on any other measure. The plications of this finding for methodology in sex-role research are discussed.

speech delay/language, twins,
deprivation, intelligence

UGLAS, J. E. and SUTTON, A. (1978) The development of speech and mental prosses in a pair of twins: a case study. *J. Child Psychol. Psychiat.* **19,** 49–56.

mmary—Severely speech delayed twin girls were separated into parallel classes and ven language training with the aim of remediating the effects of their early deprivation. e acceleration in their linguistic ability was paralleled by marked increase in inteltual functioning as measured by standardized psychometric tests. The relationship tween language training and intellectual development is discussed, together with the portance of a structured language training programme with an adult in an interactive aching situation.

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   PIAGET, J. (1953) *The Origins of Intelligence in Children* (Translated by Cook, M.), Routledge & Kegan Paul, London.

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THE JOURNAL OF CHILD PSYCHOLOGY AND PSYCHIATRY AND ALLIED DISCIPLINES

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Epidemiological Approaches in Child Psychiatry

edited by P. J. Graham

December 1977, x+402pp., £10.00/$19.50 0.12.294550.6

The papers contained in this volume – originally presented at a meeting held at the Ciba Foundation attended by workers from may different countries – provide an up-to-date account of work currently being undertaken in the epidemiology of child psychiatry. Behaviour and emotional problems are so prevalent that they form a major contribution to the total number of handicapping disorders in children. An understanding to how they occur, how common they are and what the best methods are for delivering services is an essential part of any comprehensive health care system. This book provides information not only for those working in the research field but also for those psychiatrists, psychologists, social workers and health planners who wish to inform themselves of the latest developments. The work includes an account of recent and otherwise unpublished findings in relation to urban/rural differences in rates of disorder, strategies for prevention, as well as ethological studies looking at the ways in which the mothers with different earlier experiences handle their children.

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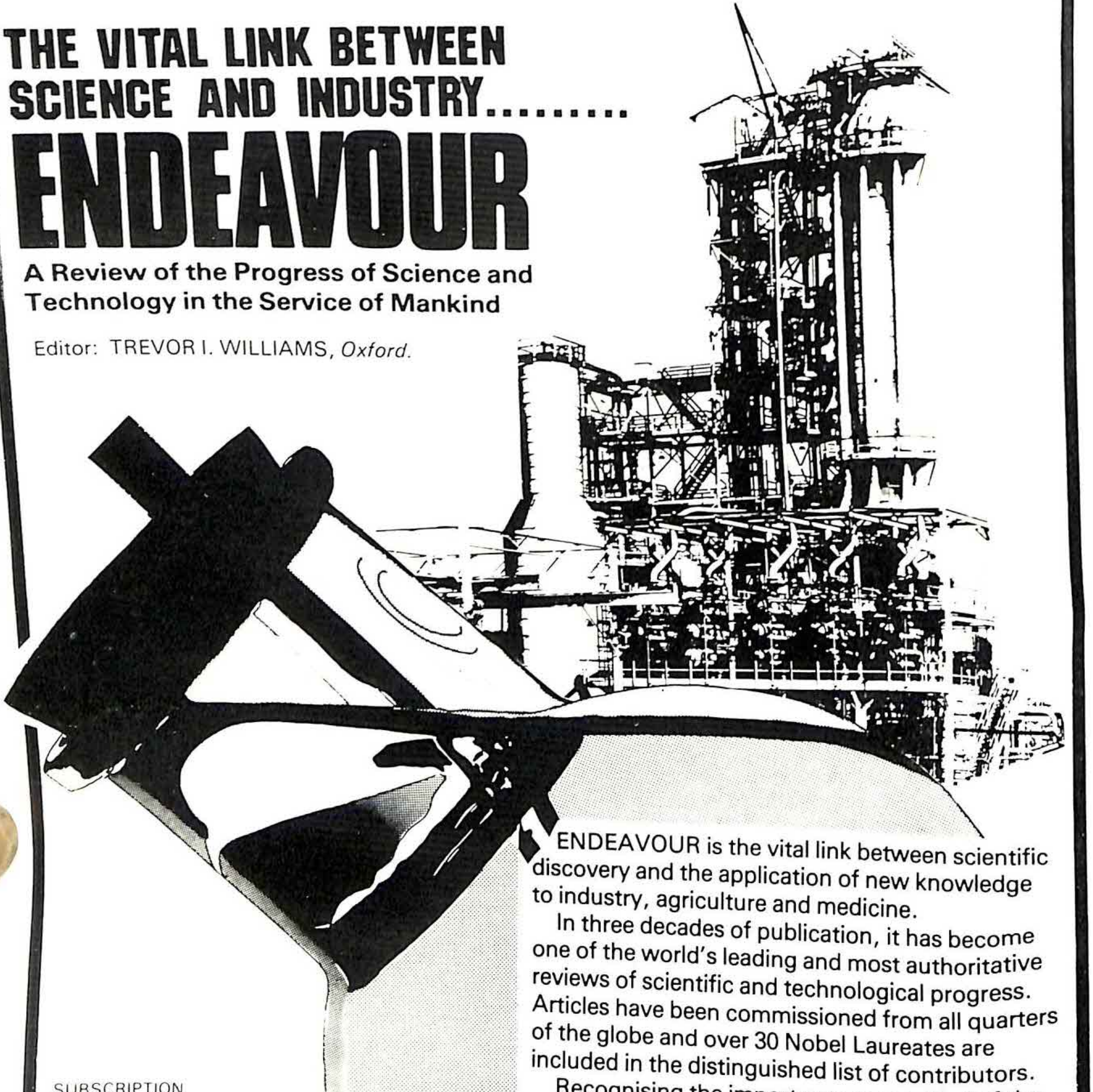

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OBITUARY

RONALD MACKEITH 1908–1977

DR. RONALD MACKEITH, an ardent supporter of the Association for Child Psychology and Psychiatry from its foundation, died on October 30th 1977, aged 69 years. He was working, some say even at his best, up to the night of his death and this capacity for sustained hard work was the hallmark of a distinguished academic and professional life.

The son of a general practitioner in Southampton he was one of eleven children with a twin sister. Educated at King Edward VIth School, Southampton, and Honorary Scholar to Queen's College, Oxford, he trained at St. Mary's Hospital Medical School, London. In 1948 he was appointed Children's Physician to Guy's Hospital, held many honorary appointments to other hospitals, became first Director of the Newcomen Centre, was awarded the James Spence Medal and many other distinctions from Universities and Academies in the U.S.A. and Europe.

After World War II a number of young doctors, whose career in paediatrics had been interrupted, were given opportunities for further training at the Hospital for Sick Children, Great Ormond Street, London, and Ronald MacKeith was among them. While most of us vied with each other for scientific prowess or to demonstrate the "good case", MacKeith stood apart as being more concerned with the child as a child and with general problems of childhood and their prevention, and displayed a knowledge of these that none of us had. He was more mature in thought. This we knew and it reconciled us to his being chosen for the staff appointment at Guy's Hospital to which some of us had also aspired. This lead in maturity he never lost and, in his own field at least, he remained the wisest of his contemporaries up to his death.

Ronald MacKeith was a member of the original committee of our Association (1957) and was its Chairman for the two years 1961 and 1962, following Dr. Emmanuel Miller, the founder, Dr. Kenneth Soddy and Dr. John Bowlby. The election of a paediatrician to this office marked the importance of the three disciplines, child psychology, child psychiatry and the general medicine of childhood, to one another; it was a wise choice. He was in his fifties, a children's physician of thirteen years standing at a great teaching hospital, with a national and international reputation as a leader of thought and action in the field of cerebral palsy and the new discipline of child neurology and developmental medicine. He also had a lifelong interest in psychosomatic manifestations in childhood. And he had many friends and colleagues who were psychiatrists.

One of the long term aims of the Association was to increase the status and prestige of child psychology and psychiatry, with the eventual establishment of university departments. With his enormous number of contacts and his own growing status he certainly helped to do that. In the first three years of his membership he was one of a subcommittee on preventive psychiatry and it was his first duty, when he became chairman of the Association, to introduce Dr. Emmanuel Miller as lecturer on "The

Possibility of Preventive Psychiatry; with Special Reference to Primary Prevention". MacKeith spent his life thinking about the prevention of ills and the programmes of his two years were biased accordingly. He obtained the full support of the Association in drawing the attention of the Nuffield Foundation Scheme for Assisting Post Graduate Medical Education to the need for the teaching of "Child Development", one of the keys to prevention.

Ronald MacKeith was profoundly affected by the picture of a childhood gone wrong, a child blighted as a foetus, a brain with normal endowment damaged at birth or by an accident later and the distress and emotional confusion in parents that complicated the loss of normal potential in a child. It is a field paediatricians had formerly tended to leave to others working in comparatively narrow specialties. It was his life's work to be a "purveyor" or distributor of appropriate knowledge gained in many narrow fields of expertise, to which he added his own thought on the practical application, to all those who have responsibility for a handicapped child. "What is known", he said repeatedly "needs to be more widely known". But this can only be achieved by long, continued effort.

In 1948 he opened the Cerebral Palsy Advice Centre at Guy's Hospital, which later became the Newcomen Centre. He had brilliant and devoted colleagues there and it has been a workshop where many ideas have originated and new methods have been tested and made available to practitioners of developmental assessment, screening and prevention of handicaps; "front-line people" as he called them. With what pleasure and pride he gave the citation for his colleague Dr. Mary Sheridan on her receiving the James Spence Medal; an honour which he himself received soon after. It is given for outstanding contributions to the advancement or clarification of paediatric knowledge.

In 1958 began the first of the International Study Groups in Child Neurology which ran biennially to 1976, ten in all, at St. Edmund Hall, Oxford. The thoroughness of the preparation and the reputation and erudition of the contributors ensured their immense success from the first to the last. A prodigious amount of old and new knowledge and new theory was here reviewed and permanently recorded; much of it in published form. This was indeed making what is known more widely known. The meetings achieved world renown and tributes and thanks poured in. "Le souvenir de notre merveilleuse semaine d'Oxford ne s'émousse pas" (does not lose its sharpness, its edge). Those who have kept the fat dossiers and conference photographs of those Oxford meetings can only review them with nostalgia and renewed sadness at the loss of Ronnie.

Although Ronald MacKeith's achievements are multiple and can be summed up as a general influence, one can be singled out as of extraordinary importance—*The Journal of Developmental Medicine and Child Neurology*. It began in 1958 as the *Cerebral Palsy Bulletin,* with E. Clayton Jones as general editor and R. MacKeith as medical editor, a task he undertook for the next 10 years. No. 1 is a thin publication of only 36 pages, price 2/6, devoted to Dr. W. J. Little. However, the list of titled patrons, prestigious churchmen and high-ranking advisory or research consultant supporting this enterprise of the National Spastics Society shows that it was considered to have a considerable potential for growth: and as years went by, under its very able joint editorships, with MacKeith becoming senior editor in 1970, it has developed into a journal of 1000 pages a year, receiving contributions from all nations, with a world circulation, indispensable to the paediatrician and child psychologist or psychiatrist. It is supremely well produced. He demanded a high standard of authorship. And here it may be mentioned that he admired the editorship of the *Journal of Child Psychology and Psychiatry*, the distinction of the journal, its reputation and its earnings. He was a member of the Editorial Board from its inception.

Ronnie MacKeith as a writer himself was prolific, not in production of books, all of which he wrote jointly, but of articles, which were short and therefore read, and editorials, prefaces, introductions, reviews. He wrote frequently and very helpfully on the vexatious complaint of bedwetting. "When a child is brought with the symptom of bed wetting the doctor disliking simple words calls it enuresis and then drifts into thinking there is a disease, 'enuresis'." He himself was a wonderful exponent of the power of plain words.

His editorials were short, wise, simple, helpful and lit with a wry humour. Coming frequently from his pen for the last 25 years they must have had great influence. Their titles give us his philosophy, his principles, values and way of teaching, e.g. "Every Hospital a Teaching Hospital"; "Is Infant Welfare and School Clinic Work Intellectually Respectable?"; "Obstetricians please help"; "Restoration of Parents as the Keystone of the Therapeutic Arch"; "Or is a Children's Physician Just Naturally Nice"; and "Save a Baby". And in them he said such things as, "In some medical out-patient clinics it is the rule that if a patient misses two appointments his name is taken off the list. This is a poor way of looking after sick people". "Are Large Congresses Worth the Money?" (small residential groups he said are of much more value if it's knowledge you want and knowledge your financial sponsors want you to have). "The Nurse who looks after the woman who has just had a baby will have much to do . . . she will put the baby naked on the mother's chest, etc."; "It is a curious thing that no one seems to consider it important to ensure that the doctors in Local Authority Service are offered a mystique of preventive (as opposed to therapeutic) medicine"; "A fly fisherman (the respectable intellectual) would find the Thames at Hammersmith extremely dull: it would present a very complicated and difficult challenge to someone anxious to prevent chemical pollution"; "It is a good thing to be more upset by children's crying than are most of our colleagues".

The Spastics Society in their long crusade for better care of handicapped children and prevention of handicaps have lost a great leader. He was not a research worker nor a specialist in any narrow field, nor is his name attached to a disease or syndrome, but there is a MacKeith's sign and it is a pretty one: the elucidation of automatic stepping (which normally disappears after about 5 weeks) in a baby up to the age of 8 months if the neck is extended.

As a speaker he could not be described as eloquent in the ordinary sense, nor even fluent, but when he got up to speak everybody waited for those carefully weighed words, in the slightly booming voice and the often difficult idea he would formulate or reformulate after rejecting his first choice of phrase. Without what is called eloquence, on questions of humanity in medicine, especially, he yet moved his audience. He liked speaking French or at any rate to say some things in French. He could be said to have had a "French period". It was soon after the war, André Thomas in his eighties had opened the eyes of paediatricians to the patterned behaviour of the newborn infant. It was fascinating. MacKeith was a leader among the enthusiasts who went over to Paris to associate with André Thomas' followers, A. Minkowski and Mme. Sainte Anne Dargassies and with them Cyrille Koupernik, Professor Robert Debré and Nathalie Masse. He loved France, the French language and the French paediatricians and they loved him. For many years he had invitations to speak at the Centre International de l'Enfance under Professor Debré. He was a Membre Correspondant de la Société des Pédiatres de Paris.

Concerning Ronald MacKeith's nature and influence, two more of his activities may be mentioned. Firstly the travelling club he belonged to, which has over the years visited other paediatricians abroad to see how they work; in Norway, Holland, Belgium, France, Italy, Germany, Switzerland and Scotland; visits on which, happily, Elizabeth was able to accompany him. And secondly the paediatricians' discussion group at Miss Anna Freud's house. He was one of the first of its privileged members. It is still meeting after 21 years. The influence was that of Anna Freud of course, but who better could convey it than he?

Concerning his nature, which was a reason for the influence he had, just as much as his intelligence and tremendous work stamina—people are impressed by a man who, while being thoroughly practical about a problem (cerebral palsy) is also moved by it. It is said of George Frederick Still that even after a lifetime at the bedside of sick children, his emotion became very noticeable whenever the child's life appeared to be threatened. Such a man also was Ronald MacKeith who never ceased to be distressed by the tragedy of severe handicap. A man who has this side to his nature, while being also very objective about things, has more effect on people than others, as he works.

Ronnie's anger, which everyone witnessed occasionally, was probably more upsetting to him than the person whom he suddenly berated for a mistaken point of view, as he thought. It was not directed personally and never caused that kind of embarrassment in an audience. The meeting was simply shaken up, often rather enjoyably, and as it proceeded after the galvanic shock the recipient of the anger picked himself up, shook off the dust, usually contributed further to the discussion and was afterwards to be seen talking with Dr. MacKeith as good friends.

He was very kind, everyone agrees; but what is meant by that? And how did he show so much kindness? One answer is perhaps to be found in his short synopsis or guide to the Feelings and Behaviour of the Parents of Handicapped Children. This understanding came from suffering together (i.e. sym-pathy) with the parents. With such knowledge a little said can be helpful, sometimes very helpful. So he could be very kind, very often. But above all when their guilt or grief or anger came out he did not shy away from it; nor did he ever insulate himself from the emotions and expressions of suffering that doctors frequently encounter.

He was also very affectionate. He ended his letters to many people "love Ronnie". It is said that he once wryly hinted that it might also be taken as an injunction. A needless one for he was loved by countless friends. But whenever he received an open demonstration of our affection and admiration his face lit up with a wonderful expression of happiness.

DERMOD MACCARTHY

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THE EFFECT OF EARLY INSTITUTIONAL REARING ON THE DEVELOPMENT OF EIGHT YEAR OLD CHILDREN

Barbara Tizard* and Jill Hodges

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INTRODUCTION

Thirty years ago Goldfarb (1945) described grave and persistent cognitive and affective defects in children whose first years were spent in institutions, even when they were later reared in private families. Most institutions in the West have enormously improved since then but they still fail to offer children growing up in them the warm, intimate and continuous relationship with a mother-substitute regarded by Bowlby (1951) as a necessary condition for healthy development. From the point of view of social policy it is important to know whether this method of early rearing produces lasting and undesirable effects. For psychologists, the development of children transferred from such institutions to private families throws valuable light on the general issue of the extent to which early experiences determine later behaviour.

Earlier studies have described the development of a group of 65 children whose first years had been spent in residential nurseries (Tizard and Rees, 1974; Tizard and Rees, 1975). These were all the 4½ year old children in the care of three voluntary societies who fulfilled the following criteria; healthy full-term babies, admitted before the age of 4 months and continuously institutionalized until at least the age of 2. Between the ages of 2 and 4, 24 of the children had been adopted, and 15 had been restored to their natural parents, whilst 26 remained in institutional care.

The institutions were in many ways of high quality—the staff–child ratio was generous, and toys and books were plentiful. However, close personal relationships between adults and children were discouraged, and the care of the children had passed through many hands—on an average 24 different nurses had worked with the children for at least a week in their first 2 years of life, and by the time the children were 4½, the figure had increased to 50.

At 4½, the institutional and restored children were reported to have no more behaviour problems than a comparison group of London home-reared children, whilst the adopted children were said to have fewer behaviour problems. Most of the adopted children were said to have formed close attachments to their new parents. However, a minority of both institutional and ex-institutional children were said to be markedly attention-seeking, "over-friendly" to strangers, and indiscriminately affectionate. The majority of the institutional children were described

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as either uninterested in adults, or inclined to attach themselves to anyone who took an interest in them.

Twenty-six of the children had been assessed at the age of 2 whilst still in institutions. At this age, their language development had been somewhat retarded (Tizard and Joseph, 1970). By the age of 4½ the mean WPPSI I.Q. of the institutional children was 105, and children adopted from these institutions at an average age of 3 years had a significantly higher mean I.Q. of 115. This difference did not appear to reflect selective placement by I.Q., or heredity. The I.Q.s at two of the children subsequently adopted were no higher than those of the remaining children, and the occupations and education of their biological parents were if anything inferior. Most of the adopted children, had, indeed, been "adoption rejects", in the sense that they had not been offered for adoption in infancy because of a family history of epilepsy or mental illness, or because they were of mixed race. Nor did the higher I.Q.s of the adopted children represent simply a response to removal from the institutional environment—children restored to their natural mothers, who were predominantly working-class, had a slightly lower mean I.Q. (100) than the institutional children. There was no difference between the I.Q.s of the white and non-white children in any of these settings (Tizard and Rees, 1974).

The significance of these findings for the future development of the children could hardly be assessed with confidence at the age of 4. But because marked changes had already occurred in the adopted children, it seemed reasonable to expect that the "normalization" process would continue and the cognitive improvement would be sustained. The development of the institutional children was more in doubt. If, as seemed likely, an important factor in their personality development was the large number of staff changes, then one would expect an increasing deviance in their behaviour. Children who left the institutions, however, might be expected to "normalize", unless, indeed, Bowlby (1951) was correct in arguing that mothering is useless if provided after the first 2 or 3 years of life.

We therefore decided to revisit the children after they had reached the age of 8: by this age we would also be able to avail ourselves of evidence from their teachers, and discover how the children coped with their peers, other adults, and the learning demands of the school.

WHEREABOUTS OF THE CHILDREN AT 8 YEARS

By the age of 8, only eight of the 65 children remained in institutional care, and one of these had had a period in a foster home. Of the other children who had been in institutions at 4½, seven had since been adopted, four were in foster homes and seven had been restored to their natural parents. We were able to interview only 51 of the 65 children whom we had interviewed at the age of 4; eight parents refused permission, and six had emigrated. Table 4 shows the placement of the remaining children. The mean WPPSI I.Q. at 4½ of the 14 children whom we were unable to test at 8 was 109, S.D. 9·4: this was not significantly different from the mean of 107, S.D. 12·8, of the remaining children nor were there any significant differences within the different groups. Only 18 of the 51 children were girls. This is because fewer girls than boys spend their first 2 years in institutional care.

Reasons for placement at 8 years

Table 4 shows that there was no evidence that the children's I.Q.s at 4½ determined whether or not they were subsequently adopted. The mean WPPSI I.Q. at 4½ of the children who remained in the institutions was not significantly different from that of the children who left the institutions after the age of 4½. However, the children fostered or adopted into manual homes after the age of 4½ tended to have had lower I.Q.s at 4 than children placed in non-manual homes (Table 5).

The major factors determining whether a child was fostered or adopted were the mothers' wishes and the child's skin colour. The children who remained in institutions were those whose mothers would neither release them for adoption nor reclaim them, or black children for whom no adoptive homes had been found. Only two of the seven children who had never left the institution by 8 were white.

Parents of later adopted and restored children

As was the case with the couples who adopted 2–4 year olds, the couples who adopted the older children were older and of higher social class than the natural parents who reclaimed them. They were middle-aged childless couples who either felt too old to undertake the care of an infant, or who were considered too old to do so by the adoption agencies. The mean age of the adoptive mothers of the older children at the time of the child's birth was 37·6 years, compared with a mean of 21·5 years for the natural mothers of the restored children. All the adoptive couples and all but one of the parents who reclaimed their children were white. Two of the five adoptive fathers of the older children were in professional occupations (social class 1), one was a clerk, and two were skilled manual workers. All the step-fathers of the restored children were manual workers.

Comparison groups. When the children were 2 and 4½ we compared their development with that of a group of 30 London home-reared working-class children. This seemed an appropriate comparison, since most of the study children had been born to working-class mothers; all but one family, who had emigrated, agreed to be re-interviewed. However, because 17 of the 25 adoptive fathers were non-manual workers, we decided to interview as well a group of 20 middle-class mothers of 8 year olds in two local schools. Only one mother whom we approached declined to be interviewed. These mothers were in no sense a proper sample, and this group was not included in the main statistical analysis, but we hoped that their answers would give us some indication of whether behavioural differences between adoptive and London working-class children were due to social class or adoptive status. Lack of resources made it impossible to test these children or carry out a full assessment of them.

Size of family. The mean number of children per family (excluding children aged 18 or older) was 1·9 in the case of all adopted children, 2·7 in the case of all restored, and 2·1 in the case of the London comparison group ($F = 3{\cdot}7$, $P < 0.05$).

Institutional staffing at eight. The institutional children were no longer living in residential nurseries, but in all-age homes containing from 6 to 19 children. One child was in a special unit for disturbed children. Because the homes contained very few, if any, children under school-age the staff ratio was less favourable than in the nurseries, ranging from one child care worker to two children in the case of the special unit to 1:3 or 1:4 elsewhere.

It was not always possible to discover how many staff had worked with the child since he was $4\frac{1}{2}$. In the case of four children, five, six, 15 and 17 staff had worked with the children for at least a week in the past $3\frac{1}{2}$ years. This meant that a total of 11, 39, 58 and 80 staff, respectively, had worked with these four children for at least a week since they had entered institutional care in infancy. In the case of the other three children, high staff turnover and the reorganization of the nursery into all-age homes meant that not only were there no records such as a staff book available, but that none of the present staff had been there long enough to be able even to give an estimate. The numbers must, however, have been very high, and the total number of staff who had cared for these children since infancy was probably around 80. Four of the institutional children were visited by relations about once in 3 months, the others had not been visited for several years.

ASSESSMENT PROCEDURE

All the interviews were carried out by one of the authors (J.H.) and with the permission of the mother, tape-recorded. Several hours were spent by the interviewer in each home or institution. During this time the WISC I.Q. (Wechsler, 1949) and Neale reading tests (Neale, 1966) were given to the child, ratings were made during testing, and the mother, or housemother, was interviewed.

Ratings of child's observed behaviour. Seven rating scales were used to rate the child's behaviour during testing. These scales included five used in our 4 year old assessment, for co-operativeness, restlessness, concentration, talkativeness and friendliness (Tizard and Rees, 1974) and two for anxiety and disinhibition, developed by Rutter and Graham (1968). Each point on the scale was anchored to specific activities, e.g. the rating for co-operativeness depended on the number of times the child refused or had to be coaxed to do a test item.

The correlation between the ratings of two investigators who assessed a pilot sample of 20 children during shortened WISC testing was $r = 0{\cdot}81$ for co-operativeness, 0·87 for restlessness, 0·64 for concentration, 0·87 for anxiety, and 0·82 for friendliness. There were no disagreements on the ratings of talkativeness and disinhibition.

Evidence from the parents

Behaviour problems. The child's mother, or the housemother most familiar with him, was interviewed using questions based on those in the Rutter Parent Questionnaire (Rutter *et al.*, 1970). The questions covered the following areas: complaints of headaches and stomach-aches; control of bladder and bowels; appetite; food fads; sleeping difficulties; restless and fidgety behaviour; concentration; impulsiveness; thumb-sucking, nail-biting, stammering and nervous tics and habits; stealing and truanting; fears, worries and unhappiness; irritability and tantrums; over-fussiness and rituals; disobedience. In addition, detailed questions were asked about the child's relationships with other children, with sibs, and with strange adults.

The mother was asked to describe the child's behaviour in each area, with supplementary questions where necessary, and on the basis of her replies the interviewer rated each of the 36 areas on a three-point scale according to the frequency and severity of symptoms. A sample of 10 tape-recorded interviews were re-rated by the senior author. Disagreements, which did not amount to 1 per cent, were resolved by discussion. "Blind" ratings of tape-recordings were not possible because incidental remarks, the mother's accent, etc., usually made it clear to which group the child belonged.

Clinic referrals. We asked whether the child had ever been referred to a doctor or a clinic for a behaviour problem.

Affectional bonds. The mother or housemother was asked a series of questions designed to elicit whether the child was particularly attached to, or affectionate towards, or clinging to, any particular adults; these questions related to whether the child wanted a particular adult at bed-time, or if he was ill; whether he objected or was upset if parents or housemother went away for the evening or for a few days; the extent to which the child wanted to be with, or followed, particular adults, and to whom he showed affection. We also asked whether the mother believed that the child was closely attached to her, how he got on with his father, and whether she herself felt deeply for the child.

Joint activities. We asked whether and how often the parents played with the child, or read to him, went shopping or on other expeditions with him, helped him with schoolwork, or let him help them around the house or garden.

Reports from teachers. We showed the mother or housemother a copy of a questionnaire, consisting of the Rutter "B" scale for teachers (Rutter *et al.*, 1970) together with some supplementary questions, and asked her for permission to send the questionnaire to her child's school. It was stressed that no mention would be made of adoption or institutions in the accompanying letter, but that the questionnaires would be presented as part of a longitudinal study of child development. Two adoptive parents refused permission and the teachers of two London children did not return the forms. We asked each teacher to complete a second questionnaire for the same sex classmate nearest in age to the study child. A comparison group was thus formed for each group of children, in addition to the London comparison group.

RESULTS 1. SOCIAL AND EMOTIONAL DEVELOPMENT

The main comparisons have been made between all adopted children ($n = 25$), all restored children ($n = 13$), children who had been continuously in institutions since infancy ($n = 7$) and the London comparison group ($n = 29$). Children with multiple placements are not included in these groups: since only three fostered children had not had multiple placements data on them are not presented. Because the numbers in each group are small, separate analyses of boys' and girls' behaviour have not been made.

Ratings of observed behaviour. At 4, both adopted and restored children had been rated as significantly more friendly and more talkative than the other children, and the restored children had been significantly more attention-seeking. By 8, the differences were much reduced. Significant differences between the groups remained on ratings for co-operativeness, anxiety, friendliness, and attention-seeking, but they were mainly due to the behaviour of two extremely anxious and hostile institutional children, and to a tendency for the restored children to be more friendly, "over-friendly" and attention-seeking than the other children.

Evidence from the parents

Behaviour problems. Each of the 36 "problem areas" were rated 0, 1 and 2 according to the frequency and severity of the child's problems. The mean "total" problem scores of the various groups ranged from 11·4 to 13·3 and were not significantly different. This remained true if "neurotic" and "anti-social" symptoms were looked at separately. Only six questions significantly differentiated the restored and adopted children from the London working-class children (Table 1). The parents of the restored children more often reported "nervous" stomach aches, "nervous" habits, e.g. picking and scratching, and stuttering. Both restored and adopted children were more often than other children described as "over-friendly", and restored mothers more often reported very bad sibling relationships than did other mothers. More mothers of adopted children than of restored or London working-class children described their children as "not sensible enough to leave on their own". This characteristic, however, appeared to be related to social class; just as many middle-class comparison children were judged "not sensible" by their mothers.

TABLE 1. BEHAVIOUR PROBLEMS REPORTED BY PARENTS OR HOUSEPARENTS

	Adopted (%) $N = 25$	Restored (%) $N = 13$	Institutional (%) $N = 7$	London comparisons $N = 29$	χ^2	d.f.	P
"Nervous" stomach aches	12	46	0	21	13·3	6	0.04
Stutters	4	23	0	0	12·3	6	0.05
Nervous habits	8	58	14	7	19·8	6	0.003
"Over-friendly"	32	46	14	10	7·6	3	0·05
Poor sib relationships	36	69	17	44	21·2	9	0·01
"Not very sensible"	40	17	29	0	20·1	9	0·02

Referrals to doctor or clinic. Sixty-two per cent of the restored children, compared with 21 per cent of the London working-class children, 5 per cent of the middle-class comparison children, 8 per cent of the adopted children and 29 per cent of the institutional children had been taken to their general practitioner or a Child Guidance Clinic because of behaviour problems ($\chi^2 = 17{\cdot}8$, *d.f.* 4, $P < 0{\cdot}01$). This finding does not appear to accord with the lack of significant mean differences in the problem scores reported by the various parent groups. However, half of the restored children had been referred to clinics by their teachers, not their parents, because of behavioural problems at school.

Affectional bonds. In answer to a direct question the great majority of adoptive and London mothers (84 and 90 per cent, respectively) said that they felt that their child was closely attached to them, but this was true of only 54 per cent of the mothers of the restored children and 43 per cent of housemothers of institutional children ($\chi = 14{\cdot}9$, *d.f.* 6, $P < 0{\cdot}025$).

It was equally true that a much larger proportion of adoptive than restored mothers felt closely attached to their child. Three of the 25 adoptive mothers made it clear that they were dissatisfied with the adoption, and that they had little positive feeling for the adopted child. A fourth mother did not express herself in these terms, but nevertheless almost all the remarks she made about her child were critical or disparaging. However, a majority of the natural mothers of the restored children—eight out of 13—said that they did not feel deeply for him, and did not love him as much as their other children. If we had been able to interview all these mothers the proportion might well have been larger since three of the natural mothers who had expressed definite dislike of their child when he was 4 had meanwhile emigrated, in one case, or given up his care, in two cases. Further, of the eight restored children who had acquired a step-father, only three were said to be on good terms with him, compared with 19 out of 25 adopted children.

Very few children in any group tended to follow their mothers around, or protest if she went out at night, and very few appeared to be clinging. However, both the adopted and institutional children were unusually affectionate; 48 per cent of adopted children and 43 per cent of institutional children often wanted a cuddle, compared with 17 per cent of London children and 8 per cent of restored children. Restored children were in fact, the least cuddly group, 54 per cent of them never wanted a cuddle, compared with 28 per cent of London children, 16 per cent of adopted children, and 14 per cent of institutional children ($\chi^2 = 13{\cdot}4$, *d.f.* 6, $P < 0{\cdot}04$). At the age of 4 some institutional and ex-institutional children had been indiscriminately affectionate, and had allowed strangers to put them to bed and comfort them if they were hurt. By 8, indiscriminately affectionate behaviour was very rare, but institutional and ex-institutional children were still more likely than London children to allow a stranger to put them to bed, whilst London children were more likely to try to insist that one of their parents put them to bed (χ^2 26·4, *d.f.* 9, $P < 0{\cdot}002$).

Changes in affectional relationships of children who left the institution after the age of 4½

Marked changes had occurred in the affectional behaviour of the children who had left the institution since our last visit.

Of the nine children adopted or restored to their natural parents after the age of 4½, three had been described as very affectionate and closely attached to their nurse when they were 4½. None of these three children were thought by their parents at 8 to be either affectionate or attached to them. But of the six children whom the nurses had not considered closely attached to anyone, five were said to be closely attached to their mothers at 8. Two children who had not been considered at all affectionate when in the nursery were now considered to be so: the other children were considered affectionate on both occasions.

Joint activities. The adoptive parents were much more likely to play with their children than the other groups of parents. Ninety per cent played with their child sometime during the week, compared with 72 per cent of parents of London children, 65 per cent of middle-class "control" parents, 46 per cent of parents of restored children, and 57 per cent of houseparents ($\chi^2 = 13{\cdot}3$, *d.f.* 6, $P < 0.04$). They were also more likely to help their children with schoolwork, and engage them in joint household activities, but these differences were not significant. Reading aloud no longer differentiated the parent groups; a minority of all parents read to their children; in the case of the adopted children, this was because many now preferred to read to themselves.

Evidence from teachers: Rutter 'B' scale. A score of nine or more on this questionnaire is usually taken as a cut-off point for psychiatric screening (Rutter *et al.*, 1970).

Table 2 shows that all the institutional and ex-institutional groups, but none of the comparison groups, including the London working-class group, had mean scores of over nine.

TABLE 2. RUTTER *et al.* (1970) TEACHERS' SCALE PROBLEM SCORES FOR DIFFERENT GROUPS OF CHILDREN

Group	Total problem score *N*	Mean	S.D.	"Neurotic" items Mean	S.D.	"Anti-social" items Mean	S.D.
London comparisons	27	5·4	5·4	1·7	2·1	0·9	1·6
Their classmates	27	4·1	5·5	1·3	1·7	0·5	1·2
All adopted	23	10·0	7·8	1·4	1·7	2·5	3·1
Their classmates	23	3·5	3·6	1·5	1·7	0·3	0·6
All restored	13	13·7	7·2	1·8	2·2	3·8	2·5
Their classmates	13	3·1	3·7	0·9	1·4	0·5	1·1
Institutional	7	9·9	9·8	1·4	1·1	2·4	2·4
Their classmates	7	4·1	4·5	2·1	2·3	0	0

Differences between the institutional and ex-institutional groups and their comparison groups on both the total problem score and the anti-social items of the scale were large and significant. The groups were not significantly differentiated by the neurotic items. The institutional and ex-institutional groups also differed significantly from the London working-class group on the total problem score ($F = 5{\cdot}1$, $P < 0{\cdot}003$) and the anti-social scale ($F = 4{\cdot}7$, $P < 0{\cdot}005$) but not on the neurotic scale.

Table 3 lists the specific items on the Rutter 'B' scale which significantly differentiated the ex-institutional children from their classmate comparisons.

The items fall into three groups—restless behaviour; poor peer relationships, and disciplinary problems. Of course, all the adopted and restored children were not described in these terms. The behaviour listed in the table was said to be "somewhat" or "certainly" true of between 48 and 61 per cent of adopted children, depending on the item, and between 54 and 77 per cent of restored children.

Attention-seeking behaviour in the classroom. We asked all the teachers two additional items about attention-seeking behaviour, which were not included in the Rutter Scale: did the child try more than most children to get attention from strangers entering the classroom, and did he try more than most children to get a lot of attention from his teacher. Both the institutional and ex-institutional groups were more often described as attention-seeking than the London children. Fifty-two per cent of adopted children, 69 per cent of restored children and 43 per cent of institutional children were said to seek attention from a stranger, compared with only 7 per cent of London children (Table 3).

Almost identical proportions were said to seek attention from the teacher more often than other children.

Both adopted and restored groups were also significantly more often described as seeking attention in these ways than their classmate comparisons, but this was not

TABLE 3. ITEMS ON TEACHERS' 'B' SCALE QUESTIONNAIRE ON WHICH ADOPTED AND RESTORED CHILDREN DIFFERED FROM CLASSMATE COMPARISONS

Somewhat or very true	% Adopted children so described ($N = 23$)	% Restored children so described ($N = 13$)	% London "controls" so described ($N = 27$)
Very restless	69*	77*	22
Squirmy, fidgety child	69**	62*	22
Often damages or destroys property	22	46*	20
Frequently fights or is quarrelsome	48*	46*	29
Not much liked by other children	44*	54**	30
Tends to be on own	52	69*	33
Irritable, touchy	57*	54*	22
Frequently sucks thumb or finger	26*	23*	4
Is often disobedient	48**	77**	15
Cannot settle to anything for long	48**	69**	26
Often tells lies	39*	69**	22
Resentful or aggressive when corrected	61**	62**	19
Seeks attention from strange adults	52**	69**	7
Seeks attention from teacher	45**	69**	15

*Significant beyond 0·05 level.
**Significant beyond 0·01 level.

true of London children or institutional children. We also asked teachers about the ways in which the children sought attention. The most common attention-seeking behaviour was not "naughtiness" but what the teachers saw as an excessive number of social approaches,—e.g. "He tells you unnecessary things just to get attention"; "Persistent conversation, usually about self, family and possessions"; "Tries to help when not asked".

Special characteristics of later adopted and restored children and of children with earlier fostering breakdowns

Most of the children in our study had left the institution between the ages of 2 and 4. However, five children had been placed for adoption at the ages of 4½, 5, 5¼, 7 and 7½ years, three children had been restored to their parents between the ages of 4½ and 5 years, and one at 7 years. Three of these five later adopted children had very high Rutter teacher problem scores—16, 17 and 20 and very high parent problem scores, and two had very low teacher and parent problem scores. Three of the four late restored children had high Rutter teacher problem scores, 11, 14 and 19, and high parent problem scores, whilst one child had very low scores. Four of the five adoptive mothers of these children believed that the child was closely attached to her, but this was true of only one of the four natural mothers of the restored children. Four of the five adoptive mothers played with the child every day, but this was not true of any of the mothers of the restored children.

Five of the adopted children had been fostered elsewhere and returned to care before being placed for adoption, an experience often believed to cause lasting psychological damage. We were unable to visit one of these children when he was 8. Of the other four, all were said to be closely attached to their adoptive parents, and all the parents seemed to return their affection. Two were children with many problems (Rutter teacher problem scores of 23 and 20), and three were considered "over-friendly" by their parents and attention-seeking by their teachers.

Relationship between variables

Teachers' and parents' complaints

For the whole group of 74 children on whom both sets of information were available the correlation between the child's total problem score as perceived by the parent and by the teacher was $+0{\cdot}30$, $P < 0{\cdot}001$. The relationship was low and not significant for the London and the restored children: for the adopted children it was $+0{\cdot}69$, $n = 23$, $P < 0{\cdot}001$. In general, agreements on individual items between adoptive mothers and teachers were higher than those between the other groups of mothers and teachers: on 10 items there was a negative relationship between the opinion of the mothers of the restored children and the teachers, but this was true in the case of only one item, "worrying", for adoptive mothers and teachers.

Ratings during testing and parent and teacher ratings

Few of the relationships between the ratings of the child's behaviour during testing and the teacher's or mother's description of the child's behaviour were significant. This was probably because most children behaved very "normally" during testing. The relationships were closest in the case of the institutional children, some of whom were difficult to test because of their hostility or anxiety.

Relationship between problems at 4½ and 8 years

Twenty-eight of the questions put to the parents when the children were 4½ and 8 were similar. The answers of the different groups of parents and nurses remained significantly the same for only six questions—sleep disturbances, sibling relationships, frequency of worries, demanding one or two particular people for comfort, friendliness and over-friendliness and tending to follow around after one or two particular people.

The correlation between the children's total problem score as reported by the parent at 4½ and 8 years was $+0{\cdot}33$, $P < 0{\cdot}01$ for all 79 children; for the separate groups, the correlation was only significant for the restored children ($0{\cdot}63$, $P < 0{\cdot}05$) and the adopted children ($0{\cdot}39$, $P < 0{\cdot}05$).

Problems at 8 in relation to earlier institutional reports

The children's case notes in the institution contained six-monthly reports on their progress. Whilst these were usually couched in neutral or positive terms, e.g. "A normal healthy child, developing satisfactorily", they sometimes included remarks which suggested that the child was a management problem, e.g. "very strong-willed, constantly looks for attention". The eight adopted children whose last report before leaving the nursery included such a comment had a significantly higher mean teacher problem score at age 8 (mean 18·5, S.D. 3·9) than the other adopted children (mean 7·0, S.D. 5·5, $t = 5{\cdot}3$, $P < 0{\cdot}001$). They also had a significantly higher parent problem score at 8 (mean 18·9, S.D. 6·3) than the other adopted children (mean 9·8, S.D. 5·6, $t = 3{\cdot}7$, $P < 0{\cdot}01$).

After placement in their new homes, the families had been visited by social workers. In 9 cases the social workers reported that the child was a management problem at that time, usually because of frequent tantrums. (Seven of these children also had unfavourable nursery reports.) The mean teacher problem score at 8 years of these nine children was 17·3 (S.D. 6·0) significantly higher than that of the other adopted children (mean 6·6, S.D. 5·0, $P < 0{\cdot}001$). The mean parent problem score of these children was also significantly higher (mean 19·3, S.D. 5·8, compared with mean 8·9, S.D. 4·7, $P < 0{\cdot}001$).

Age at leaving the institution in relation to other variables

The relationship between age at leaving the institution and Rutter teacher problem scores, parent problem scores, "over-friendliness", and whether or not the child was considered by the mother to be attached to her were all very small and not significant, except in the case of the restored children where there was a tendency for the later placed children to be less attached to their mothers (point-biserial correlation coefficient $r = 0{\cdot}46$, $P < 0{\cdot}056$).

Relationship between attachment and other variables

There was a significant relationship between whether or not the mother or housemother said the child was closely attached to her, and the frequency with which she played with the child, in the case of the adopted children ($\chi^2 = 11{\cdot}8$, *d.f.* 2, $P < 0{\cdot}002$), and the institutional children ($\chi^2 = 6{\cdot}0$, *d.f.* 2, $P < 0{\cdot}05$) but not for the other groups. However, only two of the 13 mothers of restored children played with them frequently. Whilst half of the over-friendly children were said to be closely attached to their mothers, there was a significant tendency for the unattached children to be more often over-friendly than the attached children ($\chi^2 = 5{\cdot}2$, *d.f.* 1, $P < 0{\cdot}025$).

Of the three institutional children said to be closely attached to their housemothers, one had been with the same houseparents in an all-age home since infancy, and two had been with the same houseparents since transfer to an all-age home at the age of 4½. The four non-attached children had witnessed many staff changes. Only one of these children was over-friendly and attention-seeking; one was somewhat withdrawn, whilst two were very hostile to both adults and children.

RESULTS 2: I.Q. AND READING SCORES

WISC scores by placement

Table 4 shows that the institutional and earlier restored groups were still of average I.Q., and the earlier adopted children still had above average I.Q.s. The differences between the I.Q.s of the six largest groups were statistically significant ($F = 3{\cdot}2$, $P < 0{\cdot}01$). Differences in variance between the groups, as assessed by Bartlett's test, were not significant. Comparisons between the I.Q.s of pairs of groups showed that the overall significant difference was due mainly to the higher I.Q.s of the earlier adopted children. Very similar results were obtained by analysing the scores on the verbal and performance scales separately, although differences were only statistically significant on the verbal scales. Sex differences were not significant.

TABLE 4. WPPSI AND WISC I.Q.S OF CHILDREN TESTED AT 8

Group	*N*	WPPSI I.Q.s at 4½ Mean	S.D.	Full Scale I.Q. Mean	S.D.	Verbal I.Q. at 8 years Mean	S.D.	Performance I.Q. Mean	S.D.
Adopted between 2 and 4	20	116·1	11·6	115·0	12·0	112·9	9·9	114·1	15·2
Restored between 2 and 4	9	98·2	10·4	103·4	16·6	101·8	15·7	104·7	17·8
Adopted after 4½	5	104·8	12·2	100·6	17·6	95·0	19·8	106·6	11·9
Restored after 4½	4	98·8	9·7	93·0	18·8	93·0	18·5	94·3	21·1
In institution throughout	7	105·1	10·4	98·6	9·9	97·0	12·1	100·7	8·6
Fostered after 4½	3	102·7	8·5	94·7	2·3	101·7	11·0	89·0	6·9
Several placements	3	98·0	10·1	97·3	9·0	97·0	12·5	97·7	4·0
London comparison	29	111·9	11·7	110·4	13·8	110·7	13·2	108·2	13·7

I.Q. changes between 4½ and 8 years

The mean I.Q.s of most groups had remained relatively constant over the previous four years. The I.Q.s of six of the seven institutional children had fallen by an average of 6·6 points. The later adopted children had not increased in I.Q. since leaving the institution. Because of the interest of the finding the scores of all the children who did not leave the institution until after the age of 4½ and who could be tested at the age of 8 are set out in Table 5. Only one child, the earliest to move, had substantially increased in I.Q. Ten of the 14 children had decreased in I.Q.

TABLE 5. I.Q.S OF CHILDREN WHO LEFT THE INSTITUTION AFTER 4½ YEARS

Type of placement		WPPSI Full-scale I.Q. at 4½	WISC Full-scale I.Q. at 8	Age at leaving Institutions
Adopted into non-manual family	1	107	125	4 yr 6½ months
	2	111	104	5 yr 0 months
	3	114	107	7 yr 4 months
Adopted into manual family	1	Too shy to test	84	5 yr 2 months
	2	87	83	7 yr 1 month
Fostered into non-manual family	1	106	92	6 yr 7 months
Fostered into non-manual family, then returned to institution at 8 years	1	109	106	5 yr 1 month
Fostered into manual family	1	93	90	5 yr 3 months
	2	109	96	5 yr 10 months
Fostered into manual family at 6 years 9 months after earlier restoration at 4½ years	1	89	88	4 yr 6½ months
Restored into manual family	1	101	90	4 yr 7 months
	2	111	114	4 yr 9 months
	3	95	99	4 yr 10 months
	4	88	69	7 yr 2 months

I.Q., race and social class of family placement

Table 6 suggests that a major factor in determining the higher mean I.Q. of the adopted children is the larger proportion of adoptive than natural fathers who are non-manual workers. There is also a consistent trend for the black children wherever placed to have higher I.Q.s than the white children. However, the cell sizes are too small for statistical analysis to be appropriate.

TABLE 6. I.Q.S AT 8 YEARS BY SOCIAL CLASS, TYPE OF PLACEMENT, AND RACE

In Institutions	N	Mean	S.D.	Adopted and fostered*	N	Mean	S.D.	Restored to natural parent	N	Mean	S.D.
White	3	95·7	9·3	White Non-manual homes	11	114·4	9·7	White Non-manual homes	2	118·0	1·4
				White Manual homes	8	97·8	15·9	White Manual homes	6	85·5	12·8
Black	5	101·8	9·9	Black Non-manual homes	7	117·6	14·0	Black Non-manual homes	1	120·0	—
				Black Manual homes	3	101·7	13·9	Black Manual homes	4	108·5	7·1

*One child placed only a few weeks before testing was omitted.

Joint child–adult activities and I.Q.

When the children were 4½ we found small but significant associations between certain kinds of experiences provided for them, e.g. being read to, and their I.Q. At 8, we asked about the frequency with which the parents played games with the child, engaged him in joint household activities, e.g. cooking, helped him with school work, and read to him. Most of these activities are not necessarily very intellectual, and we were mainly interested in them because of the opportunity they provided for an attachment to develop between adult and child.

Nevertheless, because joint adult–child activity also provides an opportunity for verbal learning to occur it seemed possible that there might be an association between the child's I.Q. and the amount of such activity. For the whole group of 74 children there was a small correlation between WISC I.Q. and the frequency with which the parent played with the child ($r = 0·23$, $P < 0·025$). This was mainly because the adopted children tended to have higher I.Q.s and to be played with more, and was not true within each group.

I.Q. and attachment to mother-figure

There were significant point-biserial correlations between the mother or housemother's belief that the child was attached to her and the child's I.Q., not simply overall, which could be accounted for by the fact that the adopted children tended to be both attached and of higher I.Q., but also within the separate groups. The correlations were $r = 0·34$, $P < 0·05$ for adopted children and $r = 0·59$, $P < 0·02$ for restored children, and $r = 0·50$, $P < 0·12$, for institutional children. (Since almost all the London working-class children were attached to their mothers, significant correlations were not found within the comparison group.)

Behaviour problems and I.Q.

For all 74 children, there was a significant negative relationship between I.Q. and number of teacher-reported problems ($r = -0·28$, $P < 0·008$). There were also significant negative relationships between I.Q. and number of parent reported problems for all 74 children ($r = -0·39$, $P < 0·001$), and for the adopted and restored groups separately ($r = -0·56$, $P < 0·002$, and $r = 0·79$, $P < 0·001$).

I.Q. and biological parentage

No I.Q.s were available for either the biological or adoptive parents, and information on the education and occupation of the biological parents was incomplete. So far as it goes, the evidence does not suggest that the above-average I.Q. of the adopted children was due to the selective placement of children of "superior" background into non-manual families—the great majority of all the biological fathers were manual workers. Of the 30 biological fathers of adopted and fostered children, only four were known to have been in non-manual occupations. Two of their children (WISC I.Q.s 104 and 113) had been adopted into non-manual homes and two had been placed in manual homes (I.Q.s 90 and 133).

The mean WISC Full-scale I.Q. of the 12 children of manual workers adopted into non-manual homes was 116·9, S.D. 9·3. (Another child who had only been fostered 6 weeks when tested was omitted from the analysis. All the other children had been placed at least a year before.) The other nine children of manual workers had been fostered or adopted into manual families; their mean WISC Full-scale I.Q. was significantly lower at 98·8, S.D. 13·4 ($t = 3{\cdot}6$, $P < 0{\cdot}01$).

Reading scores. The Neale Analysis of Reading Ability gives separate scores for reading speed, accuracy and comprehension. Since for each group the means of these three scores were very similar they were averaged for each child. The order of the reading scores of the different groups of children was almost identical to the order of their I.Q.s. The earlier adopted children were the best readers, with a mean reading age more than 5 months in advance of their chronological age, whilst children restored to their mothers after the age of 4½ were the poorest readers, with a mean reading age more than 7 months below their chronological age. However, because the variance in most groups were large, these differences were not significant.

Reading scores, behaviour problems and attachment to mother figure

As was the case with I.Q.s, taking all groups together there was a significant association between higher reading scores and lower scores on the teachers' and parents' behaviour problem scales ($r = 0{\cdot}33$, $P < 0{\cdot}002$ and $r = 0{\cdot}25$, $P < 0{\cdot}016$, respectively). Taking the groups separately, the association was only significant within the London comparison group ($r = 0{\cdot}38$, $P < 0{\cdot}002$) for I.Q. and teacher problems although it lay in the same direction in all groups. As with I.Q., there was a significant point biserial correlation between reading scores and attachment to mother for all the ex-institutional children ($r = 0{\cdot}33$, $P < 0{\cdot}01$) but not for the London comparison group.

DISCUSSION

At the age of 8, there were marked differences between the ex-institutional groups. Children adopted before the age of 4 had a mean I.Q. of 115, compared with a mean of 103 for children restored to their natural families at a similar age. This adopted group also had a reading age 10 months in advance of that of the restored children. These cognitive measures appeared in the main to be related to the social class of the home in which the child was living, but there were also significant associations within each group between cognitive measures, attachment to the mother, and a relative lack of behavioural problems. From our evidence one can only speculate as to how these factors were inter-related—it is possible, e.g. that those children who from the start presented their parents with severe behaviour problems less often developed mutual attachments with them and in consequence spent less time with them and received less intellectual stimulation.

There was also a large difference in the reported behaviour of adopted and restored children. Nearly two-thirds of the restored children, but only 12 per cent of the adopted children had been referred by a parent or teacher to a Child Guidance Clinic. The only difference between the kinds of problem reported by the adoptive mothers and their middle-class controls was the greater frequency of attention-seeking and "over-friendly" behaviour in the adopted children; but the restored children were said by their mothers not only to be attention-seeking and over-friendly, but also to have nervous tics and a variety of nervous habits, nervous stomach aches and to stammer more often than their working-class controls.

Further, whilst 21 of the 25 adoptive mothers believed their children were closely attached to them, only a half of the natural mothers believed that the child was attached to them. There was no evidence to suggest that the adopted children's attachments were "insecure", e.g. they were no longer particularly clinging toward their parents, as most of them had been when first placed.

The first conclusion which it seems reasonable to draw is that the subsequent development of the early institutionalized child depends very much on the environment to which he is moved. This seemed to be as true of attachment behaviour as of emotional problems and cognitive development. One child who had been disliked by the nurses and had seemed uninterested in them at 2 and 4½ years was adopted at 7 and at 8½ seemed to have developed a close affectionate relationship with both parents, though holding aloof from other adults and from children. Another child who had a close affectionate relationship with the matron of a small home was restored at 5: at 8 she and her mother seemed indifferent to each other.

The adoptive and natural parents differed in a number of respects, quite apart from social class. The adoptive parents, having very much wanted a child, were willing and happy to devote a great deal of time to him. The mothers of the restored children, who had left their child in care for several years, had been ambivalent or definitely reluctant to take him back. Moreover, the restored children tended to have more siblings, especially younger siblings, who occupied the mother's time and for whom she often openly expressed a preference. Further, whilst both adoptive parents were usually affectionate and welcoming, many restored children returned to a step-father who was indifferent or even hostile to them, or showed an open preference for his own children.

The later the child was restored, the less likely was it that a mutual attachment had developed. This was not true of the adopted children, and it appears to reflect the fact that the longer the mother left the child in care, the less room she had for him in her life. Few natural mothers played with their children, and they expected the child to be very independent, e.g. most of the restored children but only one adopted child regularly put themselves to bed. The adoptive mothers on the other hand spent a great deal of time playing with the children, and seemed ready to accept and even enjoy dependent behaviour patterns more appropriate in younger children. This was probably not only because they had very much wanted a child, but because most had asked for a child younger than the one placed with them.

Nevertheless, there were resemblances between the two groups of ex-institutional children. A half of the restored children and a third of the adopted children, but very few home-reared children, were considered by their mothers to be over-friendly to strangers and attention-seeking. At school, the teachers found both groups of children much more of a problem than their parents did.

The major complaints were with respect not only to attention-seeking behaviour, but also restlessness, disobedience, and poor peer relations. However, it seemed to us possible that all the children's problems at school stemmed not from a conduct disorder of the usual kind, but from two basic characteristics, both concerned with their social behaviour—an almost insatiable desire for adult attention, and a difficulty in forming good relationships with their peer group, although often they got on much better with younger and older children. Indeed, several of the parents suggested to us that the children's restlessness and disobedience at school, which was very much more marked than at home, were secondary to attention-seeking. As one mother put it, "I think her teacher doesn't praise her enough—praise is what she's seeking all the time. I know they can't always single her out for attention, but the time when she was in least trouble at school was when she was in a small class".

These findings appear to suggest that up to 6 years after leaving the institution some children still showed the effects of early institutional rearing. Other explanations of the findings are of course possible. First, there is the possibility that these children were genetically predisposed to emotional instability. In support of this, one could point to the fact that many had been left for at least 2 years in the institution either because their family psychiatric history was considered suspect (in fact, none had a history of schizophrenia) or because their mothers could not decide either to reclaim them or to offer them for adoption. A genetic hypothesis is very difficult to test in any direct way. The best evidence might come from a comparison with children born to the same parents but reared at home. A finding that such children had a much lower rate of behavioural difficulties would be strong evidence against the genetic hypothesis. However, only two of the children had such a sibling.

Second, one could argue that the mothers of all these children must have been under considerable stress during pregnancy, and during and after childbirth, and that this stress in some way led to the children's subsequent difficulties. If it were this factor, rather than early institutional rearing or a particularly unstable genetic inheritance which was responsible for our children's problems, then one would expect to find similar disturbance in other adopted children, who had not been reared in institutions. The most comprehensive study of adopted children in Britain is that of the National Child Development Study, on the children in the 1958 birth cohort who had been adopted (Seglow *et al.*, 1972). Most of these children were placed in the first 6 months of life, and only 3 per cent after the age of 2. Twenty-five per cent of the adopted 7 year old boys were considered maladjusted by their teachers, using the Bristol Social Adjustment Guide, compared to 17 per cent of boys in the whole birth cohort. However, the difficulties were largely in the sphere of peer relations; attention-seeking behaviour, and restlessness were not significantly greater in the adopted group. A Swedish survey of adopted children, who again were almost all adopted in the first few months of life found that at age 11, 20 per cent of the adopted boys, compared with 10 per cent of their classmates, were considered to have behaviour problems at school (Bohman, 1971).

It seems likely that the ex-institutional children in this study more often had problems at school, and of a particular kind, than children adopted in infancy, and that an explanation simply in terms of the effects of maternal stress before and after the child's birth is not adequate. Another possible explanation is that some aspect of their present situation could account for their behaviour. The environment of the adopted and restored children was so different, however, that it is difficult to see a common element which could be responsible. A third of the children were black or of mixed race, and it could be argued that this fact may have led to problems at school, but in fact these children had no more nor less problems than the white children. It could be argued that the frequency of attention-seeking behaviour might be related to the children's position as the only or youngest child of middle-aged indulgent parents. However, this behaviour was shown just as frequently by children adopted by younger couples, and similar and even more pronounced behaviour was found in children restored to large and impoverished families where the child was more often neglected than indulged. Finally, the evidence of the children's case notes showed that the most difficult children had generally already been identified as such in the nursery.

Whilst, therefore an explanation for the children's behaviour in terms of their current environment cannot be ruled out, it is difficult to think of one which could account for the data. It seems more likely that the common difficulties of many of the restored and adopted children were due to their institutional experiences, perhaps in interaction with genetic or biological factors. The multiple and ever-changing caretaking which these children had experienced—on an average 50 different caretakers by the age of 4½—must be unique in the history of child-rearing, and it would be surprising if it had not at the time affected the children's social development. It also seems likely that attention-seeking and "over-friendliness", once established, are difficult behaviours to modify. It is important to note that only perhaps a half of the adopted children and three-quarters of the restored children had particular problems. Nothing in our data, e.g. with respect to the number of institutional caretakers or the characteristics of the families the children entered, explains why this should be so, but our measures of the two environments were certainly crude.

It was not, of course, the case that most of the ex-institutional children were "affectionless", or showed the grave defects described by earlier authors. Twenty out of the 25 adopted children seemed within a year of leaving the institution to have formed a close mutually affectionate relationship with their new parents. It was rather with other adults and with their peers that about a half of these children had problems. Whether or not the child became attached to his new parents seemed to depend not on the relationship he had had with the nurses in the institution but largely on the willingness of the new parents to accept a dependent relationship and to put a lot of time and effort into developing it.

These findings appear, then, to lend some support to the notion that early experiences may play a critical role in some aspects of later development. It should be noted, however, that we did not study children who entered institutions at the age of 2 or 3—it may be that exposure to similar experiences at any time during the early years of dependency could have similar developmental effects.

The cognitive findings also give a limited support to the notion of a critical period. Of the 10 children tested at the age of 2 and later adopted before the age of 4, all had increased in I.Q. by the age of 4½ years, most very markedly. But of the children adopted or fostered after the age of 4½ only one, the first to go, increased in I.Q. Since the number placed in non-manual homes was very small the finding is of limited significance, and difficult to interpret. It may be the case that it is more difficult to increase I.Q. as the child grows older merely by placing a child with middle-class parents. This may be in part because he spends more time at school and playing with other children than does a younger child, and there is less opportunity for the intensive informal "tutoring" characteristic of middle-class families to occur. It may also be more difficult by this age, without special educational measures, to alter the child's style of interacting with adults. Since what he learns depends in part on his own contribution to an encounter, e.g. the kinds of questions he asks, his response to a changed environment will be determined not only by the characteristics of the new environment but by his own previous environmental and biological history. It is also possible that the considerable confusions in the minds of many of the older children about their own identity hindered the use they could make of new experiences.

From a policy point of view, it is important to note that the great majority of the adoptive parents appeared to be deeply attached to the children. For the adoptive parents, the crucial aspect of the adoption was the development of a mutual attachment—if this was present, they were prepared to tolerate difficult behaviour or educational backwardness.

Because only seven children had remained in institutions throughout, very limited conclusions can be drawn from this study about the effect of continual institutional care. Our initial prediction that these children would become more deviant by the age of 8 was only partially confirmed. For two children, the move from their residential nursery to exceptionally stable all-age homes meant that for the first time they experienced continuity of care with a housemother who took a particular interest in them, and both houseparents and teachers considered that these children had at present few problems. However, six of the seven were said by their teachers to be less popular than other children in their class. Their I.Q.s ranged from 88 to 113; only one child had an I.Q. below 91. Nor were they as a group educationally retarded—one child was not reading, but the others had reading ages near or above their chronological age. In all but one case, this level of cognitive development had been achieved despite the lack, not only of a permanent mother figure but of any continuing contact with an adult. One child who had been in the same all-age home since infancy had been looked after by only 11 different staff, but for the other children the numbers ranged from 40 to a conservative estimate of 80. At the age of 8, as at 4½, we found no evidence of a relationship between the child's I.Q. and the number of staff who had looked after him.

Not only the institutional group, but also the restored group, contain a very small number of cases. But because of the almost total lack of information about the development of children restored from institutions to their natural parents the data require consideration. Our study suggests that a policy of allowing parents to leave their children in institutions for a number of years, or of putting pressure on reluctant parents to reclaim their children, may not be in the best interests of the child. On all our measures, restored children tended to have fared worse than the children released for adoption. The social implications of the study, together with much additional information, is discussed further elsewhere (Tizard, 1977).

Two methodological problems have to be acknowledged. First, as discussed earlier, a possible source of bias was the fact that both authors could not avoid knowing to which group the children belonged. Second, they depended for the account of the child's behaviour at home, and his relationship with his parents, on his mother's account. Again, this seemed in practice unavoidable (e.g. few parents would have tolerated the child being interviewed) but the possibility of a variety of biases on the part of the different groups of parents and houseparents is evident.

Finally, it should be noted that the children are still very young, and that it is too soon to come to any conclusions about the long-term effects of their early experiences.

SUMMARY

Fifty-one children who had spent their first 2–7 years in institutions, and who had been previously visited at the age of $4\frac{1}{2}$ years, were reassessed at the age of 8. Seven children had never left the institutions, the rest had been adopted, fostered, or restored to their biological parent. The children's behaviour during psychological testing was assessed, and information was obtained from their parents and teachers. According to the parents' reports, the ex-institutional children did not present any more problems than the comparison groups. The teachers, however, found many differences between the ex-institutional children and their classmates. Despite very frequent staff changes, the institutional children were not retarded. The adopted children had the highest mean I.Q. and reading achievements; this finding appears to be related to the higher social class of the adoptive parents and the poorer emotional adjustment of the children restored to their biological families.

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BRIEF FOCAL FAMILY THERAPY WHEN THE CHILD IS THE REFERRED PATIENT—II. METHODOLOGY AND RESULTS

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INTRODUCTION

Over the past 20 yr, consideration of the family as a target for change in child psychiatry has become established (G.A.P. Report, 1970; Sager and Kaplan, 1972). In our growing experience of working with families in the Department of Psychological Medicine at the Hospital for Sick Children, we have become convinced of its usefulness in producing symptomatic remission in children. However, despite this, and other positive impressionistic reports of the value of the family approach, there have been relatively few attempts to evaluate it. Wells *et al.* (1972) reviewed the literature and found only two studies, both of adults and from the same research programme, which could be considered methodologically adequate. Measurement of outcome in these two studies was based on rates of rehospitalization. From a family theory point of view, knowledge of family change is as important. However, despite a large number of attempts (Straus, 1969), few instruments exist with adequate psychometric properties to measure such changes. One widely used test (Ferreira and Winter, 1965) is a decision-making task: although it distinguishes normal and abnormal families, it showed no change after family therapy (Ferreira and Winter, 1966). Most studies (Wells *et al.*, 1972) relied on clinical judgement despite its drawbacks. More recently, the particular difficulties in this field have been reviewed by Framo (1972) and Cromwell *et al.* (1976).

We have been concerned not only about the conflicting merits of child vs family treatment (McDermott and Char, 1974) and the implications for resource allocation, but also with the question as to whether families were actually changing as a result of our therapy. These concerns led us to develop a time-limited focused technique for use with families and to organize our data collection to include evidence of family change. We were stimulated by the successful use of a focal approach to shorten individual psychoanalytic therapy, introduced by Balint *et al.* (1972) and developed by Malan (1963, 1976) at the Tavistock Clinic. In association with this therapeutic model, Malan has developed a methodology for the assessment of improvement on an "individualized" basis (1959).

Fiske *et al.* (1970) in their recommendations to researchers planning studies of effectiveness of psychotherapy note: "Little systematic consideration has been given

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to the design and analysis of studies oriented towards testing whether therapy produces particular effects designated as desirable for the individual patient". We wished to apply this to families. Practical and clinical factors precluded the organization of a controlled trial, but we aimed to be specific in our therapy and in our evaluation.

To this end a weekly workshop was set up for staff to develop and work on a family focus and to record relevant data. An experienced staff member of the Tavistock Clinic's Brief Psychotherapy Workshop agreed to act as a consultant and Group Leader during the first year (1973–1974). Cases were brought, focal hypotheses and plans made, criteria for success laid down and family sessions written up and circulated so that the treatment process could be followed. The clinical aspects of the work are described in an accompanying paper with two cases presented in detail (Bentovim and Kinston, 1977). The present paper describes the assessment methodology, the operation of the workshop and all families seen in the first 2½ yr. The implications of the data and difficulties in evaluating families are discussed.

METHODOLOGY

Origins of the method

As developed for brief individual psychotherapy, the assessment carried out by Malan (Malan, 1959; Malan *et al.*, 1968, 1975) included:

A. Basic details (name, age, complaints and their duration).

B. All known disturbances in the patient's life with evidence (usually under two headings: relationships and symptoms).

C. A minimum psychodynamic hypothesis required to explain B (varying from a simple description of overt conflict, to more conventional psychodynamic unconscious motivation).

D. Evidence required for an assessment of the results of therapy as determined by C (usually divided into the "ideal" result, and a discussion of the value of partial results).

At this point the brief therapy is instituted and subsequently followed up.

E. All disturbances listed under B are re-examined at interview and changes noted.

F. Tentative psychodynamic assessment of the results by comparing D with E.

The principles of psychodynamic assessment required an identification of the patient's "predisposition" as well as the "specific stress" to which he was vulnerable. The predisposition referred to those aspects of the patient's constitution that rendered him vulnerable. The stress was sometimes an event and sometimes a "vicious circle" which interacted with the predisposition.

The requirements for improvement psychodynamically were (a) that the patient should be better than he was before the breakdown, i.e. the predisposition must be altered (and any other personality changes achieved are secondary). The proof of this required that the patient had been exposed again to the specific precipitating stress and had reacted in a new and better way. Any vicious circles that were present must have been broken by the patient's efforts. (b) Not only must disturbances (symptoms and vicious circles) have disappeared, but they must be replaced by something positive, i.e. withdrawal or avoidance responses are not enough. This requirement was particularly important when predisposition or stress could not be identified.

Finally as an essential part of the presentation of the findings, Malan claimed it was necessary to provide the case material and assessment in reasonably complete detail so that the reader could critically draw his own conclusions about the final ratings of improvement.

Procedure in the workshop

Following the Department team's full diagnostic procedure (typically multidisciplinary and family oriented) a case could be brought by the team members to the weekly 1¼ hr workshop. The workshop accepted any out-patient case excluding psychotic children and this meant that initially "problem" cases were brought. In the discussion, hypotheses were developed which could encompass the reason for referral and presenting symptoms, salient facts from the history and observations of family interaction—using a minimum of psychodynamic theory. These focal hypotheses then became the reference point for therapeutic progress and the source of predictions for evaluation of outcome. At times new information came to hand which made it necessary to modify the original hypothesis. The workshop then determined a "focal plan" which aimed to provide the therapist with guidance as to how the desired changes were to be brought about. The duration and frequency of sessions for the successful completion of the focal plan were also estimated. These conclusions formed the basis of the contract to be offered to the family. All families were seen by two therapists, a common Department practice, and both were required to be workshop members. Usually cotherapists were male and female. Sessions were written up by one or both therapists in detail and pre-circulated. The workshop then functioned as a "supervisor" for the therapy.

Constructing a focal plan is required because the hypothesis does not imply any therapeutic method. Malan (1959) omitted this step presumably because the individual psychoanalytic therapy he used implied a standardized therapeutic attitude and technique. More recently, however, he has included discussion of a "therapeutic plan" (Malan, 1976).

Therapy

Members of the workshop included psychiatrists, psychoanalysts, social workers and psychologists. They varied in expertise and theoretical orientation and many had experience in other forms of individual and group treatments of children and parents. Their styles differed and none had had formal training in specific techniques of family therapy. The treatments had very little more in common than that they were influenced by a focal plan constructed by psychodynamic hypotheses. In contrast to individual therapy with its few powerful schools that serve as reference points, family therapy is a melange of tactics and techniques (Beels and Ferber, 1969; Haley, 1971; Bloch, 1973). Using the criteria of the G.A.P. Report (1970) on the field of family therapy, our therapists were encouraged to be "Position M" therapists, i.e. to regard both individual and family factors as important. The technical aspects of therapy are outlined in the clinical paper (Bentovim and Kinston, 1977).

REVIEW OF THE CASES

Demographic data

In the 30 months under review a total of 29 cases were managed under the auspices of the workshop. As a child psychiatry facility we treated families referred for disturbance in the child. Table 1 summarizes the distribution of ages, social class and family size of the cases.

TABLE 1. DEMOGRAPHIC DATA

Number of children referred	32	
Number of familes (cases)	29	
Age range of children in years		
Pre-school (2–4)	3	(9%)
School (5–10)	20	(63%)
Adolescent (11–14)	9	(28%)
Social class of families		
Class I	8	(28%)
Class II and III	14	(48%)
Class IV and V	7	(24%)
Family size		
1 child	4	(14%)
2 children	10	(34%)
3 children	11	(38%)
4 or 5 children	4	(14%)

The majority (63%) of referrals were pre-pubertal, school-age children and most of the rest were in early adolescence. The absence of children (i.e. referred children) over 14 yr is a reflection of the population which is referred to the Hospital for Sick Children. In comparison to the Department population, the social class distribution showed an upward trend. About half of our cases were in classes II or III and the rest were evenly divided amongst class I or classes IV and V. In all cases but one, both parents were alive, together, and required to participate actively in the treatment. The unusual case, the "B family", consisted of three sisters and a brother between 3 and 8 yr, in care of the Local Authority, living together and referred as a group. Treatment involved the Housemother and a female helper from the residential home. Most of the families were small: only 14% (4) contained more than three children.

Referral data

Excluding the B family, 75% of the referrals were boys and 25% were girls. Sixty-one per cent of referrals were for neurotic disturbances, and this included three asthmatic children involved in a trial assessing the use of family therapy in asthmatics irrespective of psychiatric presentation. The children showed a large range of presenting symptoms: school refusal, separation anxiety, excessive fearfulness, temper tantrums, stealing, learning problems, depression, irrational or immature behaviour, isolation, excessive masturbation, encopresis, tics, psychosomatic

TABLE 2. REFERRAL DATA
$N = 28^*$ (100%)

Sex of referred child	
Male	21 (75%)
Female	7 (25%)
Diagnosis	
Preschool behaviour problem	2 (7%)
Neurotic disorder (including psychosomatic)	17 (61%)
Conduct or mixed conduct–neurotic	9 (32%)
Duration of problem	
Acute	0 (0%)
Chronic	28 (100%)

*The "B Family" is excluded.

disorder (polymyositis, migraine), and others. All cases reflected longstanding disturbance in the child (and usually the family) and referral was instigated either by an exacerbation of the symptoms, or by external agencies, e.g. in several, the school was threatening expulsion. In a few cases, psychological precipitants were apparent. In other cases, a symptom which was not considered serious at a younger age was either worsening slowly or was becoming more handicapping in relation to increasing demands on the child. General practitioners played an important part in coaxing some parents to seek psychiatric help.

Therapy process data

The data presented in this section were extracted from the circulated reports and summaries of the meetings and were not part of the Departments records (case files). All case numbers refer to Table 5.

Focal hypotheses were formulated in 27 of the 29 cases. They were lacking in two families which failed to engage after the initial interview, and Case 10, Beth. The formulation of the hypotheses, looked at in retrospect, appeared at times highly subjective and they varied in complexity and style. Commonly two or three were required for a family. Focal plans were developed in 25 of the 27 cases for which focal hypotheses were formulated. A focal plan was not developed for two other families which failed to engage. A plan could be made for Case 10 despite the lack of a focal hypothesis. The focal plans also varied greatly. They might be directly implied by the focal hypotheses or only indirectly linked to them.

Twenty-four per cent (7) of the cases failed to engage. In one case (No. 24) the failure to engage was spread out over 4 months of missed and attended sessions till the family explicitly rejected the offer of therapy: such an experience might well be considered "treatment". The more usual pattern involved various family members opting out and therapy discontinuing over a few weeks after the first or second session. Four of the seven failures to engage involved children with conduct disorders; the others had neurotic disorders.

The commonest recommended treatment programme was for six sessions at 3 or

TABLE 3. WORKSHOP DATA

Number of families	29
Focal hypotheses formulated	27
Focal plans formulated	26
Engagement in therapy	22
TREATMENT PROVIDED	
1 course of therapy	20
2 courses of therapy	2
Total number of therapies	24
SYSTEM WORKED WITH	
Family only	16
Marital only	4
Family and marital	4
PLANNED NUMBER OF SESSIONS/COURSE	
4 sessions	1
6–8 sessions	14
10–20 sessions	8
Contract not established	1
FREQUENCY OF SESSIONS	
Weekly	6
Fortnightly	4
3–4 weekly	12
5–8 weekly	2
Completed courses	19
Uncompleted (includes drop-outs and missed final sessions)	5
THERAPEUTIC WORK IN RELATION TO THE FOCAL PLAN	
Yes	19
No	5

4 weekly intervals. When a patient was seen more frequently, a larger number of sessions was usually planned, i.e. the duration of the therapy was usually 5–9 months, but the intensity varied. Although the contracted number was generally adhered to, in many it was not possible and often not appropriate to stick to the planned timing of the sessions: either the therapists could not be regular or the families required alterations to be made. Several of the families were offered second courses of brief therapy with the focus on the marriage; this was only accepted in two cases (Case 12 and Case 17). Therapeutic work could be maintained in relation to the designated focal plan in 77% (17) of the engaged cases. The other five cases (Nos. 6, 7, 9, 10, 14) showed complex or severe marital or family pathology. Five cases did not complete the course they had initially contracted for (Nos. 1, 4, 6, 7, 8).

Outcome data: short-term results

Implementation of the focal plan took place under supervision from the workshop and changes in plan or tactics were determined only following discussion. At the conclusion of the therapy or on short-term follow-up (3–6 months), the family was judged for improvement against the criteria developed from the focal hypotheses. Improvement for the index patient was a criterion for each case. A simple three-point scale was used for both the index patient and the family-as-a-whole: worse or no improvement, some improvement, much improvement. Rating of improvement was by workshop consensus using therapist reports.

TABLE 4. SHORT-TERM OUTCOME

Number of families	29 (100%)
Failed to engage	7 (24%)
Engaged	22 (76%)
Completed full course	19 (66%)
Subsequently seen long-term	4 (14%)

IMPROVEMENT RATINGS IN ENGAGED CASES $N=22$

Improvement	Index patient	Family-as-a-whole
Nil (or worse)	3 (14%)	11* (50%)
Some	12† (55%)	7 (32%)
Much	7 (32%)	4 (18%)

*In one case the family was assessed as functioning adequately, the child being the site of the pathology.

†The B family children have been given a single rating.

Families fell into only five of the nine (i.e. 3 × 3) possible combinations of index patient and family improvement. Table 5 lists all cases (pseudonyms provided) according to this schema: three cases showed no improvement for the index patient or the family, eight cases showed some improvement for the index patient but none for the family, four cases showed some improvement for both the index patient and the family, three cases showed much improvement for the index patient and some for the family and four cases showed much improvement for both the index patient and the family. The seven cases which failed to engage are also listed. We found that the index patient's rating was never lower than the family rating and that we had no cases of major symptomatic change in the absence of family improvement. To allow statistical comparisons an overall score of improvement was developed using a nine-point ordinal scale as follows: failure to engage or no change for either the index patient or the family scored 0 or 1 for minor changes. The appearance of symptoms in a previously well sib nullified the effect of symptomatic improvement in the index patient (e.g. Case 4). Some symptomatic change without family change scored 2 or 3. Some family change scored 4 or 5 depending on how much improvement there was for the index patient. Much family change, always associated with much symptomatic change, scored 6 or 7. Total recovery according to all criteria scored 8. From a family therapy point of view any case scoring less than 4 cannot be considered a result of "successful" therapy. On this criteria our success rate is 50% (11 families) excluding cases which failed to engage. Using a 2 × 2 contingency table for success (11) vs failure (11) and the Fisher Exact Probability Test (Lindgren and McElrath, 1966), psychiatric disturbance in the parents (four cases) was significantly related to failure ($P < 0{\cdot}05$). Unexpectedly,

TABLE 5.

Case no.	Index patient and sibship	Presentation	Focal hypotheses	Focal plan
NO IMPROVEMENT FOR EITHER THE INDEX PATIENT OR THE FAMILY				
1	Patrick 8 yr Only child	Slowness of thought Poor coordination	Failure of integration of sexuality and aggression with isolation of family members Failure of communication of feelings preserves status quo	Help each member listen to the others, and bring out feelings that are attached to words and actions
2	Anna 6 yr Youngest of 3 sibs	Eccentric behaviour Learning problems	Parents' own deprivation makes it difficult for them to respond to the needs of their children	Help parents meet each other's needs
3	Paul 4 yr Only child	Asthma	Excessive self-consciousness and need for control	Reflect to family what they are like Discover something lively
SOME IMPROVEMENT FOR THE INDEX PATIENT, BUT NONE FOR THE FAMILY				
4	Darren 10 yr Second of 3 sibs	Encopresis	Depression is not acknowledged by mother or rest of family Darren is being scapegoated	Tell the family to ignore the encopresis and let Darren manage it Help all members acknowledge depressive feelings in others
5	Henry 11 yr Oldest of 3 sibs	School phobia Migraine Obsessional traits	Henry carries father's denied fears Henry fears success in relation to father's absences and bears guilt over a previous stillbirth	Interpret dynamics to the family
6	Richard 12 yr Third of 5 sibs	Irrational and impulsive behaviour Enuresis	"Normal" aggressive feelings are excessively inhibited	Help the family appreciate their inhibition and intolerance of criticism

Criteria to be met for successful outcome	Treatment	Outcome	Score
Emotional distance between family members to be reduced: manifested by their listening to each other and recognizing and responding to feelings, both positive and negative Patrick to assert himself more outside the family	Series of 6 fortnightly sessions was not completed. Focus was adhered to—family opted out after 4th session	Family acknowledged their problems Father's alcoholism worsened	0
Parents to turn to and be satisfied by each other, e.g. sexual relations to be re-established Parents to respond appropriately to the needs of the children Anna's behaviour to mature	After 5 family sessions, 20 weekly marital sessions given. Mother, Anna and one sib then entered individual therapy	Parents became aware of problems with a high motivation for continuing therapeutic work Intra-familial criticism had diminished	1
Family to interact freely and more confidently Asthma to lessen	6 sessions (3 weekly) regularly attended	Family not pathogenic. Family behaviour within sessions became more relaxed Asthma lessened in association with medical management	1
Depression to be acknowledged and shared within the family with expression of mutual care to increase Darren to regain normal bowel habits	6 sessions (monthly) planned Family missed an appointment after each attendance. Soiling stopped by fifth session and final session missed. Further therapy refused	Soiling ceased; sib's asthma returned; depression worsened but was not acknowledged Family showed slightly more positive support	1
Father to acknowledge his fears and weakness, but to be relied on by Henry despite this Parental coalition to become more effective thus freeing children from sick roles Henry's symptoms to lessen	6 fortnightly sessions	No change in family apart from an improvement in Henry's relation to Father Henry returned to school prior to initial session. He remained a loner but had fewer headaches and obsessions. Sib developed mild phobic symptoms (2 years later both Henry and family showed much improvement)	2
Family to acknowledge and express assertiveness and mutual appropriate criticism to be possible Parents to expect and allow age appropriate behaviour, children to mature	After 3 of 6 planned monthly sessions family opted out of therapy using Richard's improvement as an excuse. Only 1 session attended by whole family. Focus poorly adhered to	Family agreed in principle to therapeutic formulations but did not wish to pursue the implications Richard's behaviour settled and he was less scapegoated	2

TABLE 5—continued

Case no.	Index patient and sibship	Presentation	Focal hypotheses	Focal plan
7	George 10 yr Twin with a younger sib	School refusal Fears Depression	Inability of the family to cope with the unexpected	Relate George's symptoms to marriage and help parents recognize their marital problems
8	John 11 yr Youngest of 3 sibs	Separation anxiety Fearfulness	Overprotective mother, passive father and son with early separation experiences	Increase John's self esteem Increase father's effectiveness Separate mother and son
9	Anthony 13 yr Middle of 3 sibs	Depression with suicidal ideation, secondary to polymyositis treated with steroids	Family expectations of perfection make them unable to tolerate a chronic illness "Bad feelings damage" is a family belief	Promote open communication to enable sharing of feelings and acknowledgement of the distress of others
10	Beth 8 yr Oldest of 3 sibs	Excessive masturbation since infancy now occurring at school	(Connections made with parental sexuality and deprivation—but no hypothesis was fully satisfactory)	Reformulate the problem around unhappiness and deprivation; and explore the marital relationship
11	Barry 9 yr Only child	Behaviour problems Learning problems Asthma Tension in family School refusal	Parents are uncertain about parenting and their marital relationship Closeness is frightening	Work on positive aspects of the marital relationship
SOME IMPROVEMENT FOR BOTH THE INDEX PATIENT AND HIS FAMILY				
12	Nigel 12 yr Older of 2 sibs	Obsessions Learning problems	The children in the family take over and express parental conflicts	Clarify children's fears that their needs will not be met, and deal with their fears of frail parental unity

Criteria to be met for successful outcome	Treatment	Outcome	Score
Family to recognize impossibility of total control of events and to respond adaptively to stresses George's symptoms to improve, including return to school	11 sessions at irregular intervals over 6 months with various combinations of family members, but work on focus could not get started	Serious marital disharmony uncovered; but parents had no wish to work on this George returned to school and was happier in himself	2
Change in marital pattern: with mother to be less overprotective, father to be more active and assertive John to be less obstructive, spoiling and provocative	8 sessions (3-weekly) mainly attended by parents plus John. Last appointment missed	John's behaviour improved at home and school but mother refused to perceive this and regarded him as "deeply disturbed". She spoiled father's attempt at assertion	2
Family to bear sadness and threats of loss directly Family, including Anthony, to accept Anthony's illness	8 family, individual and marital sessions over 6 months. Focus proved insufficient in context of severe family disturbance. Continued long-term individual therapy for Anthony with parents seen by social worker	Anthony became less depressed but remained unable to tolerate his parents Parents could not allow examination of their relationship	2
Unhappiness and deprivation to be expressed and met more satisfactorily by family Masturbation to reduce	7 sessions over 6 months with various combinations of family members. Father's absence prevented marital work	Mother less resentful towards Beth Reduction in public masturbation	3
Parent's confidence in their ability to increase and they should control Barry more Marital relationships to improve: parents to do things together with enjoyment Barry's symptoms to improve	Previously seen in long-term individual therapy. Focal therapy comprised 8 fortnightly sessions. Subsequently family seen long-term	Tension in the family reduced, Barry returned to school and was less of a problem at home Family's attitude to treatment improved	3
Parents to acknowledge conflicts Parental coalition to improve and children's needs to be more adequately met Symptoms to lessen	Family sessions at monthly intervals but after 3 interviews (of 6 planned) a crisis arose leading to weekly sessions. After 18 family sessions, 20 weekly marital sessions given. Nigel received concurrent remedial teaching	Parents become aware of their problems and the pressures on the children diminished. Their relations with families of origin improved Obsessions diminished and learning improved (2 years later parents were living apart; Nigel's symptoms were fluctuating at previous level)	4

TABLE 5—continued

Case no.	Index patient and sibship	Presentation	Focal hypotheses	Focal plan
13	David 13 yr Younger of 2 sibs	Abdominal pains and missing excessive school	Family has conflicts over dependency and assertiveness	Show the family that "bad" parts of the self can be constructively used
14	Judith 13 yr Older of 2 sibs	Antisocial behaviour at school	Adolescence is stirring unresolved adolescent conflicts of parents who are simultaneously stimulating and trying to control Judith	Help parents with their adolescent conflicts
15	B Family 8 yr 7 yr 5 yr 3 yr	Referred by social services for preparation to meet father who is in prison for killing a half sib Various nervous symptoms, e.g. sleep-walking, enuresis, tantrums	Children still experience after-effects of killing of half-sib by father They are coping with separations and a new life in the Children's Home	Emphasize and openly discuss the reality situation (including preparation for visit to father)
MUCH IMPROVEMENT FOR THE INDEX PATIENT AND SOME FOR THE FAMILY				
16	Margaret 10 yr Youngest of 3 sibs	Tics and mannerisms	Overprotection and excessive inhibition of aggression within the family Shared self-depreciation and unrealistically high expectations	Make the family aware of the extent of its inhibition Promote free communication with mutual appreciation and tolerance
17	Graham 2 yr Only child	Separation problems Excessive stranger anxiety	Very poor marital situation: marriage unconsolidated due to failure of expectations following previous marital failures on both sides	Explore failures and expectations in marriage Help couple talk through problems and create a future together
18	Lynette 9 yr Oldest of 3 sibs	Asthma	Fear of madness Guilt about the genetics (maternal grandmother was psychotic)	Modify sib's shrieking Discuss guilts and fears

Criteria to be met for successful outcome	Treatment	Outcome	Score
Family members to demonstrate their need for each other and to do things together with pleasure Family members, especially David and father to assert themselves more positively David to attend school regularly with less abdominal trouble	6 sessions monthly Some difficulty in keeping to the focus	David's symptoms abated and all family members showed individuation Better relations between David and his father	4
Parents to treat daughter appropriately to her age School behaviour to improve	6 sessions (3-weekly) Further marital therapy was refused	Both children improved at home and Judith settled well in a new school During therapy focus moved to a severe hidden marital problem which was not helped	4
Children to openly refer to father and his imprisonment and to make a satisfactory visit to father Children to attach to house-staff and to reduce aggressive behaviour there Symptoms to lessen	10 sessions 2–4 weekly with children, housemother and female helper Focus adhered to with difficulty Subsequently seen 2-monthly	Some acknowledgement of past events Visits to father have been satisfactory 3 of 4 children showed symptomatic improvement	4
Family to obtain whole range of emotions and to be able to communicate freely about them Family to diminish criticism and to increase mutual support and appreciation among its members Margaret's tics to disappear	10 sessions over 7 months (without the children at 2 of these)	Family atmosphere was less inhibited and parents developed a closer relationship Margaret's symptoms abated and all children became more relaxed (18 months later the family atmosphere and interaction had further improved)	5
Parent's expectations to become more realistic Parents to communicate and make family decisions jointly	Graham was referred to Day Centre to enable him to separate from parents. Parents given 2 series of 6 and 10 weekly sessions over 5 months	Parents become more involved in the marriage and with each other Graham's anxieties diminished	5
Family to accept and understand maternal grandmother's illness Lynette and mother to become more separate persons Lynette's asthma to improve and sib's shrieking to lessen	6 sessions 3-weekly, 2 family, and 4 marital but father did not attend 2 of the marital sessions	Shrieking stopped rapidly and asthma lessened Fears of madness persisted especially for mother, but guilt was less Marital relations stabilized freeing Lynette to be herself	5

TABLE 5—continued

Case no.	Index patient and sibship	Presentation	Focal hypotheses	Focal plan
MUCH IMPROVEMENT FOR BOTH THE INDEX PATIENT AND HIS FAMILY				
19	Kevin 9 yr Only child with older step-sister	School refusal Temper tantrums	Kevin has problems in separation and competition Family has problems with aggression Psychic pain has to be kept secret in the family	Help parents adopt a more realistic attitude to discipline and painful matters
20	Thomas 8 yr A twin (no other sibs)	Asthma Anxieties	Fears of death Parental denial of asthma	Explore fears openly and discuss the asthma
21	William 12 yr Oldest of 3 sibs	Excessive sibling rivalry Behaviour problems Moderately educationally subnormal Depressed mother	Despair (especially about handicap) is unacknowledged Family members make inappropriate demands on each other	Share painful feelings and clarify positive realities Realistic assessment of of William's handicap
22	Rachel 5 yr Older of 2 sibs	Temper outbursts	Parent's unresolved maturational problems are being projected on to the children Unable to find their own identity the parents have obtained security by self-idealization They are frightened of rage inside and are unable to be caring	Provide a containing setting for the marital relationship to help parents cope with their needs, drives and rage Focus on fears preventing sharing and commitment within marriage
FAILURE TO ENGAGE				
23	Christine 6 yr Younger of 2 sibs	Temper tantrums Isolation	Fear of madness in family, with resulting problems in behavioural control	
24	Giles 9 yr Youngest of 4 sibs Adopted	Epilepsy Behavioural problems at school	(Preliminary observation: problems of communication and secrecy)	
25	Jake 8 yr Youngest of 4 sibs	Encopresis Immature and destructive behaviour Asthma	Lack of adequate parenting Jake identifies with father "the failure" Marital conflict	Work on infantile needs and deprivation

Criteria to be met for successful outcome	Treatment	Outcome	Score
Open acknowledgement of psychic pain within the family Parents to enforce discipline despite Kevin's protests Kevin to attend school regularly	4 sessions over 7 months	Parents expressed their own experience of pain Parental discipline improved Kevin was left with a tension cough but no school problems	6
Fear of death to decrease Realities of asthma to be openly discussed Severity of asthma to lessen	6 sessions (3-weekly)	Family cooperated and discussed the issues (Mother temporarily immobilized with slipped disc during therapy) Asthma improved and family tension diminished	6
Parents to make demands within William's capacities and vice versa Family to look positively towards the future Marital relationship to improve	6 sessions 4/6 weekly	Marriage became more mutually supportive Mother less depressed William's behaviour improved	7
Parent's needs to be met within the family; they should provide each other with practical and emotional support Parents to describe themselves and each other in a realistic and sympathetic way Rachel to remain asymptomatic	20 marital sessions weekly (this followed 6 months of weekly individual therapy for Rachel and single parent casework)	Increased caring, communication and commitment in the marriage Parents settled in themselves and relations with children improved	7
	Contract not established 2 sessions with members absent Mother resistant to therapy	No improvement Comment: Mother's mother and aunt were psychotic Family dysfunctional in all major areas	0
	Refused family therapy at initial session but agreed to 6 marital sessions. Only 2 attended	No improvement Comment: Giles suspended from school. Parents contemptuous of psychiatric help	0
Marriage to stabilize and parenting to improve Mother to become less over-protective and father less harsh	Contact not established 1 session only	No improvement Comment: Mother became determined to leave family and divorce occurred subsequently	0

TABLE 5—continued

Case No.	Index patient and sibship	Presentation	Focal hypotheses	Focal plan
26	Sam 14 yr Youngest of 3 sibs	Learning problems Behaviour problems at home and school	Father's chronic malignant illness dominates the household Excessive demands made on Sam conflict with his neediness	Decrease split between parents and children Discuss father's illness
27	Marlon 9 yr Older of 2 sibs	Panic states Temper tantrums	Marlon's dwarfism is associated with vulnerability to parental conflict Mother has not separated from maternal grandmother	(Preliminary plan: discuss whether to continue in family or marital format)
28	Joseph 10 yr Younger of 2 sibs	Obsessions and compulsions	Joseph used as container for mother and marriage Symptomatic behaviour enacts unconscious impulses and conflicts	Explore marital problems
29	Charles 10 yr Fourth of 5 sibs	Temper tantrums Stealing at home Asthma (also in father and a sib)	Family myths: Men bear symptoms and are attacked by women. Men cannot hate Use of opting out as a family defence	

there was no significant association between marital disturbance and success (Fisher Exact Probability Test) or the ordinal ratings of outcome [Mann–Whitney *U*-test (Lindgren and McElrath, 1966)].

Summary of cases

The cases are described in Table 5 to inform readers of our hypotheses, therapy plans, outcome criteria and results. For reasons of space we have not been able to provide the salient factors from the history and observations of family interaction, nor our reasoning. A full account of two cases (No. 16 Margaret and No. 22 Rachel) illustrating the derivation of the data presented in the table is given in the accompanying paper (Bentovim and Kinston, 1977).

DISCUSSION

Evaluation of results

About two-thirds (66%) of the children referred showed some improvement from the treatment offered. The figure is conservative as it assumes no improvement in families that did not engage. Sigal *et al.* (1976) found that families that refused contact after no more than two interviews did as well as those who received treatment: their "no treatment" group would correspond to our failures to engage. For the purposes of considering the effects of brief focal therapy, we may exclude this group

Criteria to be met for successful outcome	Treatment	Outcome	Score
Family to free itself from father's illness and to express feelings about it Parenting to improve Sam's symptoms to diminish	After initial interview mother demanded individual therapy to protect father. This was provided, with parents only seen occasionally	Sam improved symptomatically, but a sib took on relinquished symptoms	0
	The family had been previously treated with 6 sessions of marital/family therapy when 1 cotherapist left Family did not return for course of therapy	No improvement assumed	0
Marital conflict to be openly dealt with Joseph's symptoms to lessen	1 session No alliance with mother achieved and family did not return	No improvement assumed	0
Family to abandon stereotypes and to be more flexible in role allocation Charles' symptoms to lessen	1 session attended Contract not established	Charles improved slightly Family was resistant to therapy	0

in any case on the grounds that they did not receive therapy. Eighty-seven per cent of those accepting therapy improved. Such a result could be described as "typical" (Kaffman, 1963; Safer, 1966; Sigal *et al.*, 1967; Wells, 1971); it complements the finding in psychotherapy research that a high percentage of patients receiving any psychotherapeutic treatment (including being assessed and put on a waiting list) show improvement (Meltzoff and Kornreich, 1970; Luborsky *et al.*, 1975). The common non-specific factors of psychotherapy (Rosenzweig, 1936; Frank, 1965; Strupp, 1975) are present in family therapy.

Although therapy was specifically aimed at the family, only 11 of the families, 38% of the referrals and 50% of those engaged, were rated as having improved, i.e. scored 4 or more. It is difficult to know whether this is typical of family therapy. Some workers (Weakland *et al.*, 1974) are only concerned with the presenting complaint in their evaluation of outcome, others (Sigal *et al.*, 1976) rely on parental reports of satisfaction with family functioning, whilst others (Minuchin *et al.*, 1967; Sigal *et al.*, 1967) rate the family comprehensively and lose specificity. This study was concerned only with change in a specified way: a particular area of family pathology was delineated and its resolution was a requirement for a rating of improvement irrespective of how well the family might be functioning in other respects—for example, as a consequence of a reduction in stress following the symptomatic improvement of the index patient.

e.g. Case 4, Darren.
The disappearance of Darren's soiling reduced stress within the family and they responded with increased support and positive feeling for him. However, the family's handling of depression remained unaltered.

The family might make helpful alterations which facilitate improvement in the index patient and terminate treatment without having fully dealt with the underlying problem (as defined by the workshop).

e.g. Case 14, Judith.
Judith benefitted when her parents arranged for her to attend a new school. However, the parent's handling of her adolescence was not fully satisfactory.

This may correspond to what Malan calls a "valuable false solution". A valueless false solution occurs when the index patient's loss of symptoms is rapid and this is used by (perhaps produced by) the family to maintain their dysfunction or deny their problems (e.g. Case 7, Richard). The paradox of the index patient routinely improving more than the family is partially explained by such manoeuvres. However, the main reason for it is simply that improvement on dynamic criteria is a far more stringent test of improvement than target symptom improvement or global rating of improvement. It is a requirement that the patient or family improve just in the area where they have maximum problems and prove it. As we did not rate the index patients for improvement on dynamic criteria, they appear to have done "better" than our families.

We present our findings as a preliminary attempt to assess family therapy in an individualized way. In the absence of controls we cannot say how specific our results are to our form of therapy nor how much a factor of natural remission is contributing. Nevertheless, this study provides indirect evidence that therapy related to improvement. Although all children had been suffering for long periods, the symptomatic child was regarded as a manifestation of a family problem; this problem was diagnosed and a treatment carried out on the basis of the diagnosis. Changes in the family which were predicted to occur if therapy was successful were always associated with improvement in the referred child, and the greater the improvement in the family the greater the improvement in the index patient ($P < 0{\cdot}001$, Sign Test).

Malan's methodology and family therapy

Our short-term follow-up assessment as described uses a goal attainment procedure based on Malan's methodology. This methodology was developed for the evaluation of dynamic (intrapsychic) change in individual adults. We found problems and limitations in its application to families and family therapy.

A full application would demand assessment and, if required, focal hypotheses about each individual (at least the index patient), the marital subsystem, and the family-as-a-whole. The complexity of such a procedure in a clinical situation is immediately apparent. We were mainly concerned with establishing a technique for brief family therapy and therefore constructed our hypotheses in terms of family functioning. In view of the type of referral, the index patient's symptomatic improvement was always a criterion of outcome; but psychodynamic hypotheses for individual members were not made. The result is an inversion of Malan's procedure where assessment of marriage and family life is kept at a "symptomatic" level. From our experience, an individual's reports do not provide an accurate guide to the interactional status of his marriage or family. Many of Malan's cases were married at follow-up: in one "untreated neurotic" patient with "apparently genuine improvement" (1975), No. 16—The Printer's Assistant, the patient simply refused to discuss his marital and sexual life.

We are raising the difficult problem of the assessment of the relation between intrapsychic states and external behaviour; it cannot be assumed that one is the direct correlate of the other. For instance, relationships may be used to externalize and relieve disturbed intrapsychic states (Dicks, 1967; Zinner and Shapiro, 1972, 1974). A spouse may be chosen on this basis [see Case 22, "Rachel" described more fully in Bentovim and Kinston (1977)], and children may be used similarly (e.g. Case 8, John). Malan's basic assumption is that relationships improve when intrapsychic changes occur—the family therapy assumption is that intrapsychic changes occur when relationships improve. Clearly these formulations are interdependent; in the first case, relationships do not always improve (Malan gives examples), and in the second, intrapsychic change is not an inevitable concomitant of an improved environment (unfortunately our study did not permit this to be demonstrated). Relatively healthy individuals may become caught in dysfunctional patterns of interaction from which they are unable to extricate themselves. Family therapists are used to the striking improvements in disturbed children following family intervention, often when individual therapy appears to have failed (Skynner, 1969). Modification of the family may permit intrapsychic change occurring during the individual therapy to show itself.

> e.g. Case 11, Barry.
> Individual therapy had continued over 15 months without appreciable effect. Following six family sessions at monthly intervals, Barry was less symptomatic, happier and functioning better at both home and school.

Psychoanalysts (Freud, 1966; Winnicott, 1971) have observed that problems are not always internalized permanently by the child, i.e. by implication needing psychoanalytic therapy. Even long-standing situations can be unlocked. The question is: Why do children take such a part in the family problem and how can they respond so promptly? One explanation is that the child shows symptoms in order to support "to be loyal to" (Boszormenyi-Nagy, 1972) some aspect of family life, often a disturbed parent or a bad marriage.

> e.g. Case 12, Nigel.
> Nigel's obsessional symptoms were related to his loyalty to his mother and maternal grandfather. When father and mother acted in concert and his symptoms were no longer necessary, they reduced. They returned again when mother was isolated.

When both individual disturbance and family disturbance are present, one would expect prognosis to be poor. Some evidence for this comes from our poor results with families which had a member with a history of psychiatric illness. Difficulties remain in disentangling family and individual disturbance, e.g. Beiser (1972) described a case in which, against all predictions, a woman improved markedly rather than collapsed following the death of her mother with whom she had lived in symbiotic dependency.

In Malan's work evidence for improvement is based upon alterations in the individual's "predisposition", the breaking of "vicious circles" and the individual handling specific stresses in a new and better way. This evidence comes from the individual's behaviour in his outside life. For assessment of family change we must look for evidence in the family's life, as well as the way the family and its members relate to the outside community.

Vicious circles are characteristic of family pathology and can be relatively easily recognized. Improvement requires that they disappear and be replaced by something positive.

More complex is the problem of specific stress. If this stress is external to the system (as it not uncommonly is for the individual: authority, social relations, sex) then repeated exposure is likely and can be awaited. For example, if the stress centred purely around a developmental phase of one child, then the handling of the next child going through the same phase could provide evidence as to improvement. However, if the stress is internal, i.e. an aspect of developmental change for an individual, such as puberty, then repetition will be impossible. The corresponding example in the family might be the youngest child starting school. In cases where stress is not, or cannot be, repeated, then we must have evidence that the predisposition has altered. "Predisposition" in a family is a difficult concept. From the viewpoint of systems theory and psychodynamic theory it would refer to the family boundaries (rules, myths), family coalitions (alliances, affective bonds), intermember channels (the nature of communication, control and exchange) and the family's relation to the community. Presumably accurate reliable clinical descriptions of families along these lines are possible; however, the field of family therapy is at a disadvantage here. The vocabulary for describing family interaction is confused in the literature. The field is comparatively young and although many terms and categories do exist, clear definitions and consensus on them do not. For reliability it is necessary to use terms which are generally accepted and understood, even if the cost is a loss of discrimination. For our research the cost was excessive. An accepted terminology is a form of "short-hand" description. Without it the amount of relevant data from an interview with a family increases enormously. Reporting, particularly of non-verbal behaviour, becomes a complex and problematic aspect of the whole procedure. Video-tape recording of interviews would have been a valuable addition to the circulated reports. True intrapsychic change is stable but many of the family parameters, though relatively stable, e.g. family decision making (Ferreira and Winter, 1966), may be altered by the natural life cycle of the family. This complicates evaluation of change in the predisposition. Further research into the natural history of the family from the interactional point of view is necessary.

Clinical findings

The workshop accepted all cases referred and it was hoped to discover which families would respond favourably to a brief focal approach. Severity of disturbance or chronicity of the problem had no obvious bearing on outcome, but we failed to engage larger family groups containing 4 or 5 children.

Prognosis in individual and group therapy relies on introspectiveness, curiosity and willingness to understand oneself, and realistic expectations of therapy (Bentovim and Wooster, 1968; Sifneos, 1968). These qualities do not seem so pertinent to family work. This is probably because of the possibility of focusing on behavioural and emotional interactions as they occur. It did seem that an inability to recognize and accept that the presence of a symptomatic child might be indicative of a family problem was a poor prognostic sign.

e. g. Case 6, Richard.
The family accepted their problem "in principle" (i.e. complied with the therapists), but discontinued therapy when he improved.

It is likely that when a whole family accepts and shares in the responsibility for the problems of one of its members, this will be a sign of strength. Older sibs clearly wished to be involved despite practical difficulties in some families, e.g. Case 13, David; Case 16, Margaret. One specific factor emerged as possibly an important predictor for selection of families for our approach. If one or both parents has been or could be) given a formal psychiatric diagnosis then the family is probably unable to work briefly and intensively, e.g. Case 1, Patrick (father: alcoholism); Case 2, Anna (mother: puerperal depression); Case 4, Darren (mother: depression); Case 8, John (mother: unspecified breakdown with psychiatric hospitalization in the past). This association was confirmed statistically. Two factors appear to be operating. First, the parents are vulnerable and threatened by psychotherapeutic approaches so time is required to involve them. Second, the psychopathology is complex. A child may be required to be a container for the sick aspect of the parent, e.g. John, Case 8; or if psychiatric illness is present in the family of origin the parent may need a relationship to a "sick" person.

e.g. Case 23, Christine.
Christine's temper tantrums were regarded as evidence that she carried the family psychosis (maternal grandmother and maternal aunt suffered) and hence controls were not appropriately supplied. Despite this fear that another member of the family was showing signs of madness, there was resistance to attending, particularly on mother's part.

The most important factor affecting the plan of intervention was the state of the marital relationship. The existence of marital disturbance when the child is the referred patient is not a new finding. Epidemiological studies (Rutter, 1971; Richman, personal communication) have shown that there is a high rate of marital disorder in children of all ages presenting with psychiatric disturbances. Satir (1964) wrote: "The marital relationship is the axis around which all other family relationships are formed". Outcome in cases with severe marital disturbance varied greatly: the family failed to engage (Case 25, Jake; Case 28, Joseph), or did not improve (Case 7, George; Case 10, Beth) or continued in long-term therapy of some form (Case 2, Anna; Case 11, Barry; Case 12, Nigel). Case 14, Judith, improved as a family but the marital subsystem remained disturbed and marital therapy was rejected. Improvements occurred in Case 17, Graham (two courses; 6 and 10 weekly sessions) and Case 22, Rachel (20 weekly sessions) where the marital disturbance was intensively taken up. Characteristically the disturbance was covert and had been missed during the initial diagnostic procedure. During therapy exposure became inevitable and the parents experienced this as a major emotional crisis to which they reacted by flight or request for help. Careful assessment of the marriage of any case considered for brief focal family therapy is necessary, and this may require separate interviews if it is suspected that long-standing denied or hidden problems exist. In other words, marital diagnosis must be a primary concern for treatment planning.

Evaluation of the workshop

The family therapy approach is becoming widely accepted as part of the therapeutic armamentarium in child psychiatry. In the absence of developed training facilities, it is worth examining the functioning of the workshop: its capacity to foster family work and the problems we encountered.

The particular therapeutic approach outlined here has considerable value for the beginning family therapist (Cleghorn and Levin, 1973). It provides a comprehensible and assimilable method in a complex field, encouraging a meaningful ordering of the data and demanding a determined therapeutic effort. One of the problems that our therapists had in their previous work with families was maintaining the impetus of change in family functioning which often commenced during the diagnostic interview. Therapeutic diffuseness leads to non-attendance of family members and loss of meaning in the therapy. The focal time-limited method placed a useful pressure on our therapists to recognize and describe family interactions and transactions, and then to face the families with their disturbance. It required a defined contract and specific goals.

The workshop was probably an important factor in the efficacy of treatment. It provided enthusiasm, discipline and supervision. It ensured the examination of transference and counter-transference difficulties and acted as a countervailing system to minimize the usual tendency of the therapist to become enmeshed in the interactions of families. Whether therapists can continue similar work creatively perceiving a significant focus via integration of the family history, presenting complaints and observations of family interaction, is uncertain at this stage.

The major problem of the workshop was the lack of a coherent generally accepted conceptual framework for family therapy. Neither developments from psychoanalytic theory (Boszormenyi-Nagy and Spark, 1973; Zinner and Shapiro, 1972, 1974), nor the precepts of system theories (Zuk, 1968; Minuchin, 1974; Fleck, 1976) were integrated effectively; and resistance to conceptualizing at a family level persisted (Jackson, 1966; Sluzki, 1974). Our members were able to work together on clinical problems but full discussion of families was seriously limited. Description of families qua families was crude and simplistic in comparison with the richness and complexity of description of the individuals. The G.A.P. Report (1970) remarked on the absence of a common vocabulary for the family and urged that its formulation be given priority. Without a clear theoretical base indicating the data to be gathered, our research efforts were handicapped.

A moderately standardized semi-structured approach can be applied to the interview of a child or parent, and such interviews have been shown to have acceptable reliability and validity (Rutter and Graham, 1968; Graham and Rutter, 1968). Development of a technique for interviewing the whole family to assess current patterns of interaction, i.e. a "family state" is now under way.

SUMMARY

The experience of a workshop set up within a Department of Child Psychiatry to foster family therapy and to develop a brief focal technique is described. Details are provided of the first 29 cases. Twenty-two families engaged in therapy and the referred child improved in 19 (87%) of these cases. Family change was measured using a methodology developed by Malan to assess psychodynamic change in individuals and problems in adapting it are discussed. Eleven (50%) of the engaged families improved. The pattern of child and family improvement supported the theory that a symptomatic child can be a manifestation of family pathology. A contraindication to the brief focal approach is past or present formal mental illness in a parent. Marital disturbance was frequently covert: this affected the therapeutic plan but was not related to outcome.

WORKSHOP PERSONNEL

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CHILDREN'S VIGILANCE PERFORMANCE AND INATTENTIVENESS IN THE CLASSROOM

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THE STUDY of vigilance performance was initiated in the early 1940s in an effort to determine why the detection accuracy of radar operators declined during a prolonged watch (Mackworth, 1948). Subsequent vigilance studies were essentially simulations of the watch keeping task, with subjects instructed to monitor the periodic occurrence of above threshold auditory or visual stimuli under conditions of relative isolation for periods of up to several hours. Their task was to detect the presence of a preselected "target" stimulus which occurred infrequently on a random basis. Under these experimental conditions, as in the actual radar watch, an observer's performance was rarely found to be constant over the course of the monitoring session, but frequently exhibited a progressive decline in detection rate which has been termed the vigilance decrement (Mackworth, 1968).

Variables which have been found to influence the detection rate in adults include pharmacological agents (Hauty and Payne, 1955; Payne and Hauty, 1954, 1955), vigilance task characteristics (Baker, 1963), personality style (Eysenck, 1957), and arousal level (Mackworth, 1968). The effects of two classes of variables, in particular, knowledge of results and reinforcement, have led some investigators to suggest that the vigilance decrement is largely the result of declining motivation to remain task-oriented (Smith and Lucaccini, 1969).

In research with children, the vigilance paradigm has been used primarily in clinical studies investigating the problem of "inattention" in behaviorally disordered children. Children labelled as "hyperkinetic", "learning disabled", or "minimally brain dysfunctioned" frequently have attentional difficulties (Hallahan, 1975; Safer and Allen, 1976; Wender, 1971) and are often described by their teacher as fidgeting, unable to sit for any length of time, and unable to remain at a task without becoming distracted (Cantwell, 1975). When the vigilance performance of normal children has been compared to that of hyperkinetic children (Sykes *et al.*, 1973), brain-damaged children (Grassi, 1970), and behaviorally deviant children (Kupietz, 1976), the clinical groups have exhibited poorer vigilance performance as well as a larger decrement. These findings imply that vigilance performance relates to the problems such children have in remaining attentive in other settings.

Pharmacological agents used in the treatment of hyperactive/inattentive behavior disorders in children have been shown to increase the overall number of

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vigilance detections (Conners, 1970; Conners and Rothschild, 1968; Sykes *et al.*, 1971; Werry and Aman, 1975; Yepes *et al.*, 1977). In two drug studies which analyzed the temporal aspects of vigilance performance in hyperactive children (Kupietz and Balka, 1976; Sykes *et al.*, 1972), the overall improvment in vigilance performance appeared to be due to a reduction in the slope of the decrement. That is, when they had received psychoactive drugs, their vigilance performance did not tend to deteriorate as rapidly as when they had received placebos.

When drug treatment has resulted in improved vigilance performance the implication has been that improvement has occurred in the child's ability to remain attentive and that this improvement was also observable in other settings (e.g. the classroom). While teachers often do report that children receiving drug therapy for hyperactive/inattentive behavior disorders seem to be better motivated and more attentive in the classroom, a direct relationship between vigilance performance and classroom behavior has yet to be demonstrated.

The present study was therefore undertaken to determine whether vigilance performance relates to a child's ability to remain attentive in a classroom setting. It was hypothesized that children who engaged in more inattentive behavior in a classroom setting, such as getting out of seat, head turning, etc., would also make more vigilance errors (i.e. omission and commission errors) on both an auditory and visual task.

In order to determine whether a more general relationship existed between vigilance and classroom performance, it was decided to include several other classroom measures which were available on the study children—teacher ratings of aggressive/inattentive/hyperactive behavior, and reading achievement test scores. It was hypothesized that if a relationship exists between these variables and vigilance errors, it would be in a positive direction for the teacher ratings and in a negative direction for the achievement scores.

METHOD

Subjects

The children in the present study were participating in daily, small-group, remedial reading sessions at an elementary school which they attended in Brooklyn, N.Y. These sessions provided a relatively optimal setting for observing behavior in that activities were well structured and there was little ambiguity about what children were expected to do.

Of the 19 students originally enrolled in these sessions, two withdrew from the school during the course of instruction and one had been isolated for individual sessions due to a severe behavioral disturbance. Thus, the study sample consisted of 16 children (8 boys and 8 girls) ranging in age from 7 years, 5 months, to 12 years, 5 months ($M = 10$ years, 0 months; $SD = 1$ year, 9 months) and in Full Scale I.Q. (Wechsler Intelligence Scale for Children—Revised) from 68 to 98 ($M = 79{\cdot}3$, $SD = 8{\cdot}7$). The children were from various ethnic origins and all were from families with incomes below $12,000 per year.

Instrumentation

Auditory vigilance task. The task employed was similar to that described by Rosvold *et al.* (1956) and has frequently been used to assess vigilance performance in clinical studies with children. Twelve letters—*a, d, e, g, i, l, n, o, t, w, x, y*—were randomly arranged to form a 100-letter series, with the restriction that the two-letter sequence *a, x* was scheduled to occur 15 times on a random basis. The letters were recorded on tape and played to the child through headphones at a rate of approximately 1 letter per sec. The child's task was to depress a hand-held switch whenever he heard the letter *x*, but only if it followed the letter *a*. To be considered a correct detection, the response to the *x* had to be made prior to the onset of the next letter. The task consisted of six repetitions of the 100-letter series for a total of 90 target and 510 non-target letters.

Visual vigilance task. This task consisted of the same 12 letters randomly arranged into an 80-letter series with the restriction that the *a*, *x* sequence was scheduled to occur 12 times on a random basis. All letters were upper case and were presented singly on slides. As in the auditory task, the child was instructed to depress the hand-held switch whenever he saw the letter *x* come after the letter *a*. The letters were rear-projected by a Kodak Carousel Projector Model 850 on to a screen placed 3 ft (0·91 m) in front of the child and were approximately 3 in. (76·2 mm) in height. The task consisted of six repetitions of the 80-letter series, for a total of 72 target and 408 nontarget letters. Each letter remained on the screen for 0·8 sec, with a 1-sec interval between presentations. This gave the child up to 1·8 sec to make a detection response. Control over the presentation rate was achieved by cue pulses to the Carousel projector from a Norelco Model LCH 1000 PR Cassette Pulse Recorder.

Observations of classroom behavior. Children's behavior during remedial reading sessions was observed using the time sampling format described by Werry and Quay (1969). The procedure involved observing a child for 20 sec and then, during the next 10 sec, recording the behaviors which had occurred. This alternation of observation and recording intervals was continued until 40 20-sec observations had been made, yielding a total of 13 min of actual behavioral observation.

The remedial reading sessions were conducted so as to maximize each child's participation in the lesson (i.e. small group instruction with emphasis upon frequent and systematic eliciting of responses by the teacher). However, when not actively responding, all children were expected to remain attentive and to refrain from disruptive behavior. Thus, in that setting, inattentive or disruptive behaviors provided the basis for assessing a child's ability to maintain continuous attention to an academic task. Based upon interviews with the classroom teacher and on videotapes of children performing similar academic tasks, eight behaviors were identified which were considered inappropriate or "off-task" with regard to what was expected of children in that setting. These behaviors and their definitions are shown in Table 1.

In a given observation session, the maximum frequency with which each of the eight behaviors could be observed was 40 (the number of 20-sec observation intervals). For the purposes of data analysis, the actual frequencies obtained for each of the eight behavioral categories were summed to yield an overall index of off-task behavior.

The reliability of the observation procedure was established prior to actual data gathering by having two observers simultaneously record the off-task behavior of a single child. This procedure was followed by two pairs of observers (the authors and two research assistants) who observed two children each in the classroom. Interobserver reliability was expressed as the per cent agreement on total frequency of occurrence of off-task behavior, calculated by dividing the smaller observed frequency by the larger. The interobserver reliabilities obtained for the four children were: 100%, 98%, 93%, and 91%.

Other classroom-related measures. As part of the remedial reading project, two other sets of data had been gathered on the children: ratings from the remedial reading teacher of each child's classroom behavior, and reading achievement scores.

Teacher ratings were obtained several weeks prior to classroom observations using the Conners Behavior Rating Scale (BRS) (Conners, 1969). The BRS is a 39-item scale which has been factor analyzed into five behavioral dimensions: "aggressivity" (factor I), "inattentiveness" (factor II), "anxiety" (factor III), "hyperactivity" (factor IV) and "sociability" (factor V). The items comprising each factor are rated as 1 (not at all) to 4 (very often). The weighted items are then summated and divided by the number of items in the factor to yield a mean factor score.

The BRS has been found to be senstive to drug effects particularly the "aggressivity" and "hyperactivity" factors (Whalen and Henker, 1976; Winsberg *et al.*, 1972, 1974; Yepes *et al.*, 1977), and to discriminate groups of children with and without behavior disorders (Kupietz *et al.*, 1972; Werry *et al.*, 1975). For purposes of the present study, only the dimensions of "aggressivity" (factor I) ,"hyperactivity" (factor IV), and "inattentiveness" (factor II were analyzed.

Reading achievement was measured with the Reading Recognition and Comprehension subtests of the Peabody Individual Achievement Test (PIAT) (Dunn and Markwardt, 1970), and the Roswell–Chall Diagnostic Reading Test of Word Analysis Skills (Roswell and Chall, 1956).

TABLE 1. BEHAVIORS CONSIDERED AS "OFF-TASK" IN THE CLASSROOM SETTING

Behavioral category	Definition
1. *Head turning*	Head turned 90° from line of sight with teacher or, more than 1 head turn of lesser magnitude within the 20 sec. Also, looking at ceiling or downward into lap, toward floor, etc.
2. *Body turning*	Body turned at least 90° (shoulder perpendicular to table)
3. *Leaving table or seat*	Neither buttock is in contact with the seat, or the child is looking under table, or sliding his chair
4. *Playing with objects*	Playing with irrelevant objects such as hair, fingers, skin, toys, buttons, etc. Also included in this category is head banging, or hitting table with hands, pencil, etc.
5. *Playing with lesson materials*	Non-solicited touching of lesson materials (grabbing for cards, teacher, etc.)
6. *Physical contact*	Striking another child using an open hand or fist, or with an object which is held or thrown
7. *Irrelevant responses*	All questions and comments which are irrelevant to the on-going lesson. Also included here are muttering, whispering, and singing
8. *Vocalizations*	Cursing, whistling, crying, yelling, etc.

These tests were administered approximately 1 week following the administration of the vigilance procedure.

Procedure

The daily remedial reading sessions, which were 45 min in length, had been in progress for 4 months prior to the initiation of the present study. For instructional purposes, the 16 children had been grouped into five classes, with three to four students per class. Observations were conducted during the first half of each session, which was devoted to systematic instruction in specific reading skills (e.g. word recognition, oral reading). The authors and two research assistants conducted the observations, and only one observation was conducted during any given reading session. Each child was observed on two separate occasions—by different observers—with approximately 1 week intervening.

Approximately 1 week following the completion of the second classroom observation, children were tested on the auditory vigilance task, followed several days later by the visual task. Prior to administering the auditory task, each student's familiarity with the alphabet was established by having the child name all 26 letters presented in random order. All children were able to name the letters without error.

To assure that a child understood the nature of each task, a short practice series of letters was presented in the same modality as the task being administered. If the pupil failed to respond appropriately, the instructions were repeated and the practice series readministered until correct responding was established. During task administration, a research assistant sat behind the child, and recorded the vigilance data.

RESULTS AND DISCUSSION

Vigilance performance

Omission errors (the failure to detect an *a, x* sequence) and commission errors (responses to nontarget letters) constituted the basic vigilance data for analysis in both the auditory and visual tasks. The mean number of omission errors was 40·4 ($SD = 20{\cdot}4$) in the auditory task and 7·6 ($SD = 7{\cdot}6$) in the visual task. For commission errors, the respective means were 12·5 ($SD = 21{\cdot}4$) and 6·9 ($SD = 10{\cdot}4$).

The auditory and visual tasks were found to be unrelated with regard to omission errors ($r = 0{\cdot}09$), but were highly correlated with regard to commission errors ($r = 0{\cdot}84$, $P < 0{\cdot}01$). The absence of a significant correlation between auditory and visual omission errors has been a frequent finding in vigilance studies with adults (Buckner *et al.*, 1960; Buckner and McGrath, 1963; Gunn and Loeb, 1967). Moreover, in the one study which compared both omission *and* commission errors in adults (Gunn and Loeb, 1967), a pattern similar to that reported in the present study emerged. That is, there was little evidence for an association between auditory and visual omission errors, and there were significant correlations between auditory and visual commission errors.

The absence of a significant association between auditory and visual omission errors has been of theoretical interest to previous investigators and has typically been interpreted by them as evidence against the existence of vigilance as a general trait or characteristic (Buckner and McGrath, 1963). The implication of a significant cross-modality correlation in commission errors, however, is unclear. Responses to nontarget stimuli may reflect an underlying behavioral dimension which is independent of modality. In this regard, there is some evidence that "impulsive" subjects are more likely to make such responses (Krupski *et al.*, 1971).

Vigilance and off-task behavior

In the present study significant negative correlations were found between chronological age (CA) and off-task classroom behavior ($r = -0{\cdot}63$, $P < 0{\cdot}01$), and between CA and auditory omission errors ($r = -0{\cdot}82$, $P < 0{\cdot}01$). Inasmuch as another study (Gale and Lynn, 1972) has also shown age to be inversely related to children's omission errors, the correlations between vigilance errors and off-task behavior in the present study were partialled for CA. The zero-order and CA partialled correlations are shown in Table 2.

TABLE 2. ZERO-ORDER and CA-PARTIALLED PEARSON CORRELATIONS OF VIGILANCE ERRORS WITH OFF-TASK CLASSROOM BEHAVIOR

	Off-task behavior	
Vigilance error	Zero-order	CA-partialled
Auditory omissions	0·66†	0·31
Auditory commissions	0·23	0·03
Visual omissions	0·56*	0·46*
Visual commissions	0·63†	0·49*

*$P < 0{\cdot}05$ (one-tailed).
†$P < 0{\cdot}01$ (one-tailed).

As can be seen from the table, among the zero-order correlations, only that for auditory commission errors failed to reach significance. Children who exhibited higher rates of off-task behavior also made more vigilance errors. It can also be seen that when CA was held constant, the resultant partial correlations were reduced for both vigilance tasks, remaining significant only for the visual task.

Clearly, age was a factor in a child's ability to monitor stimuli and to remain task-oriented in the classroom. Younger children tended to make more vigilance errors and to engage more frequently in off-task behavior than did older children in the group.

However, age did not completely account for the obtained relationships between vigilance and off-task behavior. The relatively slight reduction in the correlations between visual errors and off-task behavior, when CA was controlled, indicates that while these relationships were influenced by age, they were also to a large degree, independent of age. Indeed, the CA-partialled correlations in Table 2 suggest that age was a less important variable in visual than in auditory performance. However, whether this differential contribution of age was modality-specific or due to differential task difficulty could not be determined.

Vigilance and behavior ratings

Table 3 shows the mean factor ratings obtained by the group on the "aggressivity", "inattentiveness" and "hyperactivity" factors of the BRS, along with both zero-order and CA-partialled correlations between the factor ratings and vigilance errors. Compared to comparably-aged children from a previous study (Kupietz *et al.*, 1972), the present group was rated as less deviant on all three factors than a group of hyperactive/aggressive outpatients, but more deviant than normal public school children.

As shown in Table 3, the only significant correlations were those between visual commission errors and the "aggressivity" and "hyperactivity" factors. In part, this finding reflects the fact that both factors were highly correlated with each other in the present study ($r = 0{\cdot}84$, $P < 0{\cdot}01$). The fact that a high correlation between these factors has also been reported by others (Werry *et al.*, 1975) suggests that the two factors may be measuring a single behavioral dimension.

The items comprising the "aggressivity" and "hyperactivity" factors pertain to behavioral disturbances of an impulsive or acting-out nature (e.g. temper outbursts, disturbing other children, making noises), while the "inattentiveness" factor describes more passive or withdrawn behaviors (e.g. daydreams). Consequently, it is reasonable that the "aggressivity" and "hyperactivity" factors rather than the "inattentiveness" factor would be correlated with visual commission errors, since this type of vigilance response has been associated with "impulsive" behavior Krupski *et al.*, 1971).

Vigilance and reading achievement

Table 4 shows the correlations of vigilance errors with post-instruction scores on the PIAT and the Roswell–Chall test, partialled for CA. I.Q. failed to correlate significantly with either the reading or vigilance measures and therefore was not included as a control variable. From Table 4, it can be seen that there was a tendency for vigilance errors to vary inversely with reading achievement scores, with one of the 16 correlations reaching significance—approximately the number expected by chance. Children who made relatively few vigilance errors tended to have higher scores on both the PIAT and Roswell–Chall. This trend is consistent with findings of the only other known study which investigated the relationship between

TABLE 3. MEAN FACTOR RATINGS ON CONNERS (1969) BEHAVIOR RATING SCALE, AND ZERO-ORDER AND CA-PARTIALLED PEARSON CORRELATIONS BETWEEN VIGILANCE ERRORS AND BEHAVIOR RATINGS

Behavior rating scale				Vigilance error							
				Auditory omissions		Auditory commissions		Visual omissions		Visual commissions	
	Factor	Mean	SD	Zero-Order	CA-Partialled	Zero-Order	CA-Partialled	Zero-Order	CA-Partialled	Zero-Order	CA-Partialled
I.	"Aggressivity"	1·61	0·60	0·19	0·12	0·27	0·24	0·00	−0·06	0·49*	0·48*
II.	"Inattentiveness"	2·20	0·43	0·24	0·20	0·23	0·19	0·34	0·31	0·36	0·33
IV.	"Hyperactivity"	2·12	0·76	0·33	0·18	0·42	0·36	−0·06	−0·18	0·61*	0·57*

*$P < 0·05$ (one-tailed).

vigilance and achievement in children (Kirchner and Knopf, 1974). In that study, second graders who scored in the upper third of the sample in achievement made significantly fewer omission and commission errors than children who scored in the lower third.

TABLE 4. PEARSON CORRELATIONS OF VIGILANCE ERRORS WITH POST-INSTRUCTION SCORES ON PIAT AND ROSWELL–CHALL*

	Reading measure		
Vigilance error	PIAT Word recognition	PIAT Reading comprehension	Roswell–Chall
Auditory omissions	−0·24	−0·02	−0·29
Auditory commissions	−0·31	−0·37	−0·44
Visual omissions	−0·36	−0·32	0·07
Visual commissions	−0·31	−0·33	−0·55†

*All correlations partialled for CA.
†$P < 0·05$ (one-tailed).

Vigilance decrement

An additional index of vigilance performance, based upon omission error rate, was also analyzed. As noted previously, a frequent finding in vigilance studies has been the tendency for performance to deteriorate over the course of the task. Since this decrement in performance has been found to be larger for children with attentional problems (Kupietz, 1976; Sykes *et al.*, 1973), it was hypothesized that the size of the decrement would be positively correlated with off-task classroom behavior and with the behavior ratings, and negatively correlated with reading achievement.

In order to test this hypothesis, decrement scores were computed for each child by subtracting omission errors made during the first half of each vigilance task (first three trials) from those made during the second half (last three trials). Comparisons of omission errors made during the first and second half of each task showed that for the group as a whole, there was a significant performance decrement in both the auditory ($t_{15} = 2{\cdot}08$, $P < 0{\cdot}05$) and visual ($t_{15} = 1{\cdot}96$, $P < 0{\cdot}05$) tasks. However, when the individual decrement scores and classroom measures were correlated, they were neither consistently nor significantly related in the directions predicted.

CONCLUSION

The present data support the general hypothesis that children's vigilance performance relates to their attentiveness in a classroom setting. Chronological age was an important variable in this relationship, though differing in its contribution as a function of type of vigilance task. This suggests that while the ability of children to remain attentive to a task improves with age, it interacts with other variables as well. Task difficulty may be one such variable in that as task difficulty decreases, chronological age may become less important as a determinant of task performance. Results showed that the mean number of errors and the *SD*s were much smaller for the visual task than for the auditory task, suggesting that it was much less difficult for these children. When CA was controlled, visual errors continued to display a significant relationship with off-task behavior while auditory errors did not. According to this interpretation, when the vigilance task is easy, CA becomes a less important variable in task performance and the residual relationship (i.e. that not contingent upon CA) between vigilance and classroom attention becomes more apparent.

Other variables which might be expected to influence a child's task attentiveness would be the presence of a behavior disorder, and the drugs used in its treatment. Since children receiving psychostimulants are often described by their teachers as more motivated and attentive in the classroom, and since such drugs are known to improve vigilance performance, an association between treatment-related improvement in vigilance performance and reduction in the rate of inattentive classroom behavior would be predicted. A positive finding in this regard would be further support for the vigilance paradigm as a measure of classroom behavior and would also underscore its usefulness as a research tool in pediatric psychopharmacological studies.

This present attempt to relate laboratory and naturalistic measures of attention was conducted under the highly controlled circumstances of a small-group setting with well structured lesson activities designed to elicit continuous participation from the child. Furthermore, the children studied were selected on the basis of reading problems, which in some cases may have been associated with the presence of behavior disorders. Consequently, the extent to which the present findings can be extrapolated to larger, more traditional, classrooms with "normal" children is unknown. Such classroom settings are generally less structured than that of the present study, and may be expected to contain many uncontrolled sources of environmental influences on the child's behavior.

The validity of vigilance performance as a predictor of classroom behavior needs to be further established within more traditional classroom settings and with other child populations.

SUMMARY

The current study was conducted in order to test the hypothesis that vigilance performance is related to children's attentiveness in a classroom setting. Sixteen children were administered an auditory and visual vigilance task, and their performance related to their "off-task" behavior in the classroom. In addition, the relationship of vigilance performance to teacher ratings of the children's behavior, and to reading achievement scores was also assessed. Vigilance errors (omission and commission errors) were significantly positively correlated with off-task behavior, but were only weakly correlated with the other two variables. The findings support the general hypothesis that vigilance performance relates to a child's ability to remain attentive in the classroom.

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MINOR PHYSICAL ANOMALIES IN HYPERACTIVE, RETARDED AND NORMAL CHILDREN AND THEIR FAMILIES

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HYPERACTIVITY is a term currently employed to describe a heterogeneous group of children who exhibit overactivity, irritability, impulsivity and attentional deficits. The recent interest in this syndrome results from the difficulty that these children experience in adjusting to the expectations of their environment, at home, in school with their peer group, and the possible higher risk of emotional problems, alcoholism and interpersonal problems in later life (Morrison and Stewart, 1971, 1973a).

Several etiological explanations including pre-natal or birth trauma, neuro-developmental lag, psychogenic factors and genetic transmission, have been proposed, but the heterogeneous nature of the syndrome has led many investigators to suggest that a single etiological theory is insufficient to encompass the various combinations of behavioral indices observed in these children (Wender, 1971; Douglas, 1974).

Recent attempts to delineate etiological factors in the hyperactive syndrome have led to the study of minor physical anomalies (MPA) and the presence of a high number of MPA in hyperactive children has been well documented (Firestone *et al.*, 1976; Rapoport and Quinn, 1975; Waldrop and Halverson, 1971; Waldrop *et al.*, 1968). These so-called MPA are such things as malformed ears, enlarged head circumference, hypertelorism, etc. which are often found in Down's Syndrome but without concomitant major morphological aberrations are themselves of little

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cosmetic or medical concern. The presence of MPA is also associated with idiopathic retardation (Smith and Bostian, 1964), school failure (Rosenberg and Weller, 1973), congenital deficiencies in speech and learning (Waldrop and Halverson, 1971) as well as learning disabilities and autism (Stegg and Rapoport, 1975).

Despite the ample documentation of MPA, their development and role in behavior disorders is unclear as yet. Smith and Bostian (1964) attribute these MPA to an abnormality in the process of embryonic differentiation which may also affect the brain and central nervous system. Quinn and Rapoport (1974) found an association between MPA and pregnancy complications as well as activity level in hyperactive boys. In addition, high stigmata scores were associated with a history of hyperactivity in fathers. These authors suggest that the findings are consistent with a genetic etiology which may be phenocopied by an insult in pregnancy, probably in the first trimester of pregnancy.

The goals of the present study were twofold: (1) to compare the frequency of MPA in hyperactive, retarded and normal control children, and (2) to establish the rate of MPA in the families of these children.

METHOD

Subjects

The three groups of *S*s consisted of boys from the various clinics of the Children's Hospital of Eastern Ontario whose families were willing to participate in the study. The first group consisted of 13 boys previously diagnosed as being hyperactive by a pediatrician and clinical psychologist, along with their parents and siblings. The second group consisted of nine boys previously diagnosed as being in the mild or moderate range of retardation of idiopathic etiology, along with their parents and siblings. The third, a control group, consisted of 15 boys who had been attended to in the medical and out-patient clinics for minor medical problems, along with their parents and siblings.

Apparatus

Weighted MPA scores were obtained using the modified MPA survey and scoring method of Waldrop and Halverson (1971). Male and female norms for head circumference for children to 18 years were obtained from Nellhaus (1968). Norms for intercanthal distance were obtained from Finegold and Bossert (1974). Adult norms for head circumference were unavailable for females but the values for 18 year olds from Nellhaus proved adequate. Rapoport (personal communication, 1977) was able to provide norms for adult male (19 years of age and over) head circumference.

The teachers of children were required to fill out Conners' (1969) rating scale for teachers. This scale of 39 items has been factor analyzed to give five factors: (1) conduct-problem, (2) inattentive–passive, (3) tension–anxiety, (4) hyperactivity, and (5) sociability. The score for each factor is based upon the mean of the items within the factor (a four-point scale, 0–3 is used).

RESULTS

Analyses of variance were carried out in the five factors of Conner's rating scale (Table 1) and significance was achieved in the inattentive–passive factor $F\ (2, 28) = 4{\cdot}09$, $P < 0{\cdot}03$, the tension–anxiety factor $F\ (2, 28) = 4{\cdot}85$, $P < 0{\cdot}02$, and the hyperactivity factor $F\ (2, 28) = 3{\cdot}96$, $P < 0{\cdot}02$. Newman–Keuls tests were performed ($P < 0{\cdot}05$) indicating that the retarded children were rated as more problematic on the inattentive–passive and tension–anxiety factors than the other two groups who did not differ from each other. On the hyperactivity factor the hyperactives were rated significantly higher than the normal or retarded children who did not differ from each other.

TABLE 1.
MEAN FACTOR SCORES ON CONNERS' RATING SCALE FOR TEACHERS

	Hyperactive	Retardates	Controls
Inattentive-passive	1·13 ± 0·65	1·63 ± 0·70	0·70 ± 0·82
Tension-anxiety	0·75 ± 0·61	1·42 ± 0·76	0·55 ± 0·60
Conduct-problem	0·68 ± 0·48	0·42 ± 0·31	0·42 ± 0·52
Hyperactivity	1·38 ± 0·62	0·75 ± 0·56	0·57 ± 0·81
Sociability	0·65 ± 0·67	1·0 ± 1·12	0·35 ± 0·50

As Table 2 indicates, there was a significant difference in MPA between the groups $F\ (2,\ 35) = 15{\cdot}83$, $P < 0{\cdot}001$. A Newman–Keuls multiple comparison indicated that the hyperactive and retarded children had significantly more MPA than the controls, but did not differ from each other. Similarly, the families of the hyperactive and retarded children had more MPA than controls $F\ (2,\ 136) = 6{\cdot}80$, $P < 0{\cdot}002$ but did not differ from each other. The ages of the three groups of children did not differ (Table 3).

TABLE 2. FAMILY MEMBERS' MPA SCORES

Subgroup	Group		
	Hyperactive	Retarded	Control
Index *S*s	4·00 ± 2·0 (13)*	4·67 ± 1·65 (9)	1·40 ± 0·91 (15)
Families	2·82 ± 1·86 (39)	2·72 ± 1·82 (29)	1·79 ± 1·31 (71)
Fathers	2·43 ± 1·72 (7)	1·00 ± 0·71 (4)	1·75 ± 0·75 (12)
Mothers	2·72 ± 1·62 (11)	2·63 ± 1·60 (8)	1·20 ± 1·01 (15)
Male sibs	4·13 ± 2·64 (8)	3·18 ± 1·72 (11)	2·10 ± 1·64 (31)
Female sibs	2·73 ± 1·44 (15)	3·17 ± 2·48 (6)	1·77 ± 1·01 (13)

*Sample size.

TABLE 3. MEANS AND STANDARD DEVIATIONS FOR AGES OF HYPERACTIVE, RETARDED AND CONTROL CHILDREN

Group	Age
Hyperactive	10 yr 1 month (1 yr 11 months)*
Retarded	11 yr 4 months (3 yr 5 months)
Control	11 yr 8 months (2 yr 9 months)

*Standard deviations in brackets.

Hyperactive and control children did not have more MPA than their parents or sibs $F\ (3,\ 46) = 2{\cdot}33$, $P > 0{\cdot}05$; $F\ (3,\ 80) = 1{\cdot}39$, $P > 0{\cdot}05$. However, there was evidence of a difference in MPA scores within the families of retarded children $F\ (3,\ 30) = 2{\cdot}98$, $P < 0{\cdot}05$. A multiple comparison of the means revealed that this difference was due to fathers having significantly fewer MPA than their retarded children. No other reliable differences between family members were present. It is quite probable that this finding is artifactual, due to the low number of fathers (four) within this group. In fact, as Table 4 points out, a considerable number of fathers were absent from the homes of hyperactive and retarded children, as compared to the controls, due to divorce or separation. A chi square analysis revealed this difference to be significant ($\chi^2 = 8{\cdot}53$, $P < 0{\cdot}02$.

TABLE 4. NUMBER OF FATHERS ABSENT DUE TO SEPARATION OR DIVORCE

	Group		
Family status	Hyperactive	Retarded	Control
Fathers absent	4	4	0
Total cases	12	8	15

DISCUSSION

In the present study, the investigator was aware of the group affiliations of the families prior to obtaining the MPA surveys. This has been the case in much of the MPA research. However, when blind techniques have been utilized, the findings have been very similar (Firestone *et al.*, 1976; Waldrop *et al.*, 1976; Waldrop and Goering, 1971). This would seem to suggest that expectations on the part of investigators have had minimal effects. Furthermore, the fact that 10 subjects, chosen at random, were examined for MPA by an independent, trained observer and a Pearson correlation coefficient of 0·90 was obtained ($P < 0{\cdot}01$), supports this contention.

The finding of higher MPA scores in the hyperactive and retarded children is consistent with previous studies (Firestone *et al.*, 1976; Halverson and Victor, 1976; Quinn and Rapoport, 1974). The fact that the frequency of anomalies was similar in these two groups of children further suggests that although "atypical" children may have more anomalies than "normals", there is a lack of specificity as far as the topography of the disorder is concerned (Links, 1977; Firestone, 1977).

Of particular interest is the finding that probands and their families had similar MPA scores. Although no behavior rating scales or diagnostic evaluations were undertaken on other family members, informal conversations revealed that in only one family was there a report of a sibling having required professional mental health intervention. This finding supports a genetic hypothesis in regards to the transmission of MPA, but does not allow explanation concerning why one member of a family with high MPA becomes a behavior problem while others do not. Conceivably, as suggested by Rapoport and Quinn (1975), it is only those children who have numerous MPA and have suffered pre- or para-natal complications that develop behavior disorders. Nevertheless, to date, there is no evidence that MPA, alone or associated with birth complications, are sufficient to predict atypical behavior. In fact, the suggestion that MPA might be used as "markers" in the early detection of problem children (Rapoport and Quinn, 1975; Steg and Rapoport, 1975; Waldrop and Halverson, 1971) becomes somewhat questionable since the number of false positives within a family would be extremely high. On the other hand, high MPA sibs may indeed have had behavior problems, but presented less of a problem to their parents. Possibly, treatment is sought only for the most disruptive child in a family, the others appearing quite normal by comparison. Further evaluation of the genetic hypothesis and the role of MPA and birth complications in the etiology of behavior disorders would require a twin study.

The finding of increased marriage breakdown in the families of the hyperactive and retarded *S*s can be interpreted in two ways. The difficulties associated with raising a problem child may put increased stress on parents, thus facilitating marriage breakdown. On the other hand, one might speculate that the problems present in the child are to some extent present in one or more of the parents and that this factor contributes to marriage breakdown. In the case of the hyperactive children, this particular interpretation would be consistent with the findings of Morrison and Stewart (1971, 1973a, 1973b, 1974) who report an increased incidence of alcoholism, hysteria and sociopathy among the parents of hyperactive children.

SUMMARY

Hyperactive, retarded and normal children as well as their siblings and parents were examined for the frequency of minor physical anomalies (MPA). The results indicated that the hyperactives, retardates, their siblings and parents had equal numbers of MPA that were significantly higher than in the normal control children and their families who did not differ from each other. It was noted that there were more fathers absent due to divorce or separation in the two patient groups.

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ECHOIC MEMORY CAPACITY IN AUTISTIC CHILDREN

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INTRODUCTION

Hermelin (1976) has suggested that autistic children store verbal information in a raw unstructured form, rather than analysing and restructuring the information as do normal individuals. There is ample evidence in support of this suggestion. For example, echolalia is a conspicuous feature of autistic language (Bartak *et al.*, 1975). Frith (1969) showed that acoustic features of verbal inputs are abnormally salient to autistic children. Hermelin and O'Connor (1970) showed in a series of experiments that autistic children's immediate recall makes abnormally little use of semantic coding strategies, although acoustic coding is relatively good. Overall scores of the young normal, subnormal and autistic subjects tested in Hermelin and O'Connor's experiments showed no consistent deficit in the experimental subjects. This finding suggests that autistic children may compensate for poor semantic coding by superior ability in acoustic coding.

Although there is no universally accepted model of normal human memory, certain generally acceptable statements may be made about the normal uses of acoustic and semantic coding. First, something may be said about the recency effect in serial position curves of immediate free recall. The recency effect extends over the three to four most recently presented items in immediate recall tasks. The effect is phonemically encoded, and is not modified by variations in word length, presentation rate, nor by concurrent intellectual activity (Baddeley, 1976). Thus, the recency effect appears to reflect some sort of "echoic memory system" of fixed item capacity, operating only when recall does not follow a filled delay. Second, semantic coding normally predominates in memorising earlier portions of lists for immediate recall, and in memorising for delayed recall, acoustic coding playing an important but secondary role (Glanzer and Cunitz, 1966; Brown and McNeill, 1966).

Without subscribing to any specific model of human memory, therefore, it might be suggested that autistic children's relatively good immediate auditory verbal recall arises from superior "echoic memory" of the kind underlying the recency effect. Alternatively, it is possible that relatively good immediate recall arises from unusually efficient use of an acoustic coding strategy in recalling earlier portions of lists. If this were so, unusually efficient use of acoustic coding might also be expected to give relatively good delayed recall scores. However, this appears not to be the case (Boucher and Warrington, 1976). The hypothesis of superior echoic memory in autistic children therefore seems more probable than a hypothesis of superior use of acoustic coding of earlier presented items.

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The experiment reported below was designed to test the capacity of echoic memory, or recency effect, in autistic children. Since superior echoic memory was predicted, a normal age-matched control group was tested, against whom good echoic memory might be demonstrated. In addition to being matched for chronological age (C.A.), experimental and control groups were matched for digit span (D.S.). The digit span is known to be a peak ability in those autistic children who are not concomitantly severely mentally retarded (Bartak *et al.*, 1975). The autistic group in the present experiment was selected as being relatively able and their digit spans were subsequently found readily to match those of a group of normal age-matched controls. The use of a relatively able autistic group entails that the group was not representative of autistic children in general, the majority of whom are markedly mentally retarded. However, there is some advantage in testing more able "nuclear" cases of the syndrome, where interpretation of findings is not complicated by the presence of concomitant handicaps. The spectrum of ability in autism is also so wide that it is not practicable to devise experiments suitable for wholly representative experimental groups. Bias in subject selection must, however, be borne in mind in discussing experimental findings.

Matching on digit span also entails that subject groups were matched on a facet of memory function which was related to the variable under investigation, namely the capacity of the echoic memory system. Although this point must also be borne in mind in assessing findings, matching on D.S. is desirable to ensure that the recall tasks used were of equal difficulty for both groups along the parameter of list length. Matching on D.S. also enables exact comparison to be made between the contribution which echoic memory makes to the span of autistic children, and the contribution it makes to the span of controls. In view of the normalcy of D.S. in more able autistic children, it seemed possible that echoic memory makes an abnormally large contribution in span tasks, as it is also hypothesized to do in immediate free recall.

The method selected for calculating the capacity of what is here called echoic memory was the use of Baddeley's (1970) formula for calculating what he at that time called "capacity of the short term memory system". Baddeley has subsequently altered his theoretical position but the formula remains an appropriate tool for present purposes. The formula is based on the assumptions that there are two memory systems involved in immediate recall and that items are registered initially in system (1) and are then transferred to system (2). Individual items in the process of transition may briefly be registered in both systems simultaneously. Furthermore, in delayed recall only system (2) is operative. In the terms of the present study, echoic memory corresponds to system (1) and "other memory systems" or "non-echoic memory" (about which nothing is specified here) corresponds to system (2). To calculate the capacity of echoic memory, delayed recall score is subtracted from immediate recall score, allowance being made for the probability of any item being in both memory systems simultaneously. Estimation of the number of items simultaneously held in both memory systems is made as follows (where N is the number of items in the list, I is the immediate recall score, and D is the delayed recall score). $N-D$ items are not registered in system (2). $I-D$ of these items are registered in system (1). On the assumption that the probability of being registered in system (1) is independent of whether or not an item is in system (2), $[(I-D)/(N-D)]$ D items in system (2) will also be represented in system (1). Thus, the total number of items in system (1), echoic memory = $(I-D) + [(I-D)/(N-D)]\ D$ which may be rewritten as $N\ [(I-D)/(N-D)]$.

METHOD

Subjects

Two groups of 10 children were tested, an autistic group and a group of normal children. The autistic children had been diagnosed on the basis of Kanner's (1943) original criteria as restated by Rutter (1968) and attended a special school for autistic children. This school caters particularly for more able autistic children and the curriculum emphasizes formal aspects of education, including the teaching of reading. The normal children attended local primary and secondary schools and were selected by their teachers as being of average ability with no special problems.

Experimental and control groups were matched for chronological age (C.A.), sex and digit span (D.S.). Although experimental tests used written material, subjects were not matched for reading ability, either in the sense of mechanical reading ability, nor in the sense of the ability to read with comprehension. However, it was ensured that all stimulus words were within the mechanical reading ability of all subjects. It is certain that controls were superior to the experimental subjects in both aspects of reading skill. This discrepancy is not germane, however, since the work of Frith and others has already shown that autistic children's recall may be good even where comprehension (as evidenced by semantic coding) is poor, and the purpose of the present experiment was to test whether poor comprehension might be compensated for by good echoic memory. It is worth pointing out that a comparable discrepancy of comprehension would have occurred had spoken, rather than written, material been used.

Details of subject groups, including information which was available as to verbal and non-verbal skills in the autistic group, are shown in Table 1.

TABLE 1. DATA ON SUBJECT GROUPS

	Number	Sex M/F	Mean C.A. (and range)	Mean vocabulary age (and range)*	Mean nonverbal M.A. (and range)†	Mean digit span (range)
Autistics	10	8/2	14·2 (9·10–18·0)	5·9 (4·7–9·5)	8·9 (<5·6—>11·0)	6·3 (5–8)
Normals	10	8/2	13·11 (9·5–16·7)	Presumed normal for C.A.	Presumed normal for C.A.	6·4 (5–8)

*As tested on the Peabody Picture Vocabulary Test.

†As tested on the Coloured Progressive Matrices.

Material

Test stimuli were lists of words five or six letters in length, each word being printed in black ink on individual cards. Words were taken from the Mein (1961) list of words in the vocabulary of subnormal children. Mean word frequency was the same for all lists (20–30 per cent). Two sets of three 10-word lists were prepared. One set was used for delayed recall and the other set was used for immediate recall.

Procedure

Two test sessions were given several days apart. In the first session delayed recall was tested, and in the second session immediate recall was tested. Subjects were tested individually. In the delayed recall condition, list words were presented singly at the rate of two every three sec, the subject reading the words aloud. When all 10 words of any list had been presented, the subject read aloud for 30 sec as rapidly as he was able from a large print version of *Treasure Island*. The autistic and some of the younger normal children had some difficulty reading longer words in the intervening task. However, the aim of an intervening task is to prevent rehearsal and this aim was almost certainly achieved by the present task. Moreover, the choice of *Treasure Island* ensured that older normal children were not alienated from the experiment by being given a more juvenile text to read.

Two minutes were allowed for recall, after which the next list was presented. Procedure in the immediate recall condition was the same as that used in delayed recall except that the filled retention interval was omitted.

RESULTS

Recall scores and the results of *t*-tests comparing the performance of the groups in each condition are shown in Table 2.

TABLE 2. MEAN NUMBERS OF ITEMS RECALLED PER LIST IN TESTS OF IMMEDIATE AND DELAYED RECALL

	Autistics	Normals	t	P*
Delayed	4·0 (1·8 S.D.)	5·1 (0·9 S.D.)	1·7	0·10
Immediate	5·4 (1·5 S.D.)	6·5 (0·9 S.D.)	2·1	0·05

*Two-tailed significance tests were used.

The capacity of the short term memory system was calculated using Baddeley's formula and was found to be 2·4 items in both groups of children.

DISCUSSION

This experiment demonstrates that the capacity of the echoic memory system is entirely normal in a group of relatively able autistic children with normal digit span. Capacity was not supranormal, as had been thought possible. However, echoic memory capacity is clearly a peak ability in more able children, since other verbal and non-verbal abilities in the autistic children tested here were on average well below normal levels (see Table 1).

It may also be concluded from the findings on the present experiment that autistic children are inferior to their normal peers in the recall of earlier presented items for immediate recall. This is not surprising in view of their poor language ability and known deficit in semantic coding. However, the finding is of interest in that it demonstrates that lack of semantic coding of earlier items is not compensated for by unusually efficient use of acoustic coding. In view of this finding it is surprising that the difference in delayed recall scores did not reach significance in this experiment. However, there was a trend towards impairment in the autistic group ($P < 0{\cdot}10$ on a 2-tailed test) and other experiments show rather consistent deficits in autistic children's delayed recall (Boucher and Warrington, 1976).

Echoic memory capacity as a peak ability is consistent with the observations of echolia, enhanced salience of acoustic features of verbal inputs and with the preference for acoustic coding strategies, described in the Introduction. The findings of normal echoic capacity combined with impaired ability to recall earlier presented items, carry Hermelin and O'Connor's conclusions a stage further by indicating that good acoustic, or phonemic, coding is restricted to the recency component in autistic children's recall. It may be mentioned here that one of Hermelin and O'Connor's (1970) experiments in which recency was found to be the same in autistic children and young normal controls, is not comparable to present findings since sentences formed half of the material for recall in that experiment.

A subsidiary aim of the present experiment was to assess the contribution of echoic memory to the digit span of autistic and normal children. Since echoic capacity for words is the same in both groups, it seems likely that echoic capacity for digits was also the same in both groups. If this were so, then it appears that echoic memory makes an entirely normal, but not supra-normal, contribution to the digit span of autistic children. The surprising conclusion which would follow on from this is that more able autistic children must also be entirely normal in their ability to recall earlier presented digits in strings for recall. This contrasts with relatively poor ability to recall earlier presented words other than digits, as demonstrated in this experiment. The conclusion, however, is in keeping with other findings (Boucher, 1975) which show (a) that autistic children's immediate memory span for words differs more from their span for digits than is the case in other groups of children; and (b) that the ability to learn long lists of digits is relatively good in autistic children. These findings all suggest that the recall of digits, and perhaps specifically of serially ordered strings of digits, is unaffected by variables which impair recall of other than very recently presented words.

The conclusions from this experiment apply only to speaking autistic children of relatively high ability. This group may differ qualitatively from the group of less able, non-speaking autistic children (DeMyer, 1975) and conclusions from this experiment can clearly not be generalized to include the non-speaking autistic child. The experiment shows that the speaking autistic child has entirely normal echoic memory capacity co-existent with sub-normal language comprehension, sub-normal ability on a non-verbal test (the Coloured Progressive Matrices) and with impaired recall of earlier presented items in lists for immediate recall. This finding is consistent with, and extends, earlier observations on the autistic child's immediate recall ability. The finding does not, however, explain the entirely normal digit span of the more able autistic child, which must partly depend on good ability to recall earlier presented digits.

SUMMARY

Capacity of echoic memory, or recency effect capacity, was assessed in a group of relatively able autistic children and normal age-matched controls. Capacity was found to be the same for both groups and echoic memory may therefore be said to represent a peak ability in more able autistic children. This finding is discussed in relation to another known peak ability, namely the digit span and in relation to echoic and non-echoic components of autistic children's free recall scores.

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THE CHILDREN'S BEHAVIOUR QUESTIONNAIRE FOR COMPLETION BY TEACHERS IN AN ITALIAN SAMPLE. PRELIMINARY RESULTS

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INTRODUCTION

Rutter (1967) developed a children's behaviour questionnaire to be completed by teachers, able to discriminate between different types of behavioural or emotional disorder, as well as between children who show disorder and those who do not. The scale has 26 items concerning the child's behaviour at school and the teacher is asked for each to indicate whether it "certainly applies", "applies somewhat" or "doesn't apply". These indications are scored 2, 1 or 0, respectively, and a total score is then obtained for each child. In addition, the scores for certain items are grouped together to obtain a neurotic sub-score (sum of the scores of four items such as "often worried", "unhappy", etc.), and an antisocial sub-score (sum of scores of six items such as "often tells lies", "is often disobedient", "bullies other children", etc.). A score of nine points or more on the total scale is considered to show evidence of some disorder (Rutter, 1967).

This questionnaire has been used as one of the screening instruments in different populations of children: in Aberdeen (Rutter, 1967), on the Isle of Wight (Rutter *et al.*, 1970), with London school children (Rutter, 1973), children in long-term residential care (Wolkind, 1974) and with Ugandan school children (Minde, 1975).

Lacking a similar screening instrument in Italy, we translated the "Children's Behaviour Questionnaire" into Italian and asked the teachers of a sample of Verona school children to complete it. The present paper reports test–retest and inter-rater reliability results as well as preliminary validity findings.

METHOD

Subjects

The questionnaire has been completed for 418 children (252 males and 166 females) of the primary and secondary schools of Verona City, aged between six and 13 years. Thirty-five teachers participated in the reliability study, completing a total number of 1022 questionnaires. The ques-

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tionnaire was introduced to them by the school doctor (S.M.) who then asked for their collaboration. Furthermore, the scale was filled out by the teachers of 41 children attending Child Guidance Centers in Verona and Padova.

Procedures

Test–retest reliability was checked in the primary schools by getting seven teachers to rate 148 children twice, with a 3–5 months interval between the ratings. The ratings were made in the last term of a school year and in the first term of the next school year, and on the first occasion the teachers were not told that they would have to rate the children again.

Inter-rater reliability was tested in two different ways: in the primary schools by getting five teachers to rate 84 children in the last term of the school year and five other teachers to rate the same children 3-5 months later in the first term of the next school year.

In the secondary schools instead, where classes are run by several teachers teaching different subjects, it was possible to ask three teachers (in each of the six classes participating in the study) to rate the same children at the same time (total number of 186 children).

The discriminative power of the scale was tested by comparing the total scores of the children of this sample (mean scores of the two or three ratings) with the scores of 41 children (29 males and 12 females) of the same age range attending Child Guidance Centers in Verona and Padova. Only children with a definite diagnosis of emotional or behavioural disorders were selected and questionnaires were sent out individually to their school teachers. Furthermore, for all children of the clinic sample scoring nine or more on the scale, the diagnosis based on the scale sub-scores (neurotic or antisocial disorder) were compared with the clinical diagnoses made previously from the case notes.

Analysis of data

Product-moment correlations were calculated to assess test–retest and inter-rater reliability in the primary schools for total scores, neurotic and antisocial sub-scores, as well as for single item scores.

In the secondary schools, where three raters were concerned, the inter-rater reliability among all raters was calculated for total scores, neurotic and antisocial sub-scores using a three-way analysis of variance (the dimensions being raters, children and items), according to Maxwell and Pilliner (1968). Correlation coefficients, which represent the estimated agreement between the whole sample of three raters over all items (26 for total score, four and six for neurotic and antisocial sub-scores, respectively) and a second (hypothetical) set of three raters over the same items, were obtained by comparing the between-child mean square with that for interaction between children and raters.

Inter-rater reliability among all three raters for single item scores was tested by calculating a similar coefficient of agreement derived from a two-way analysis of variance (the dimensions being raters and children) (Maxwell and Pilliner, 1968).

RESULTS

Test–retest reliability

The product-moment correlation on the two occasions for the 148 children of the primary schools between the total scores was 0·80, compared to 0·89 obtained by Rutter (1967), 0·68 between the neurotic sub-scores and 0·72 between the antisocial sub-scores. All of them were significant beyond the 0·001 level (Table 1). Product-moment correlations for single items ranged from 0·33 to 0·85, all being significant beyond the 0·001 level (Table 2).

Inter-rater reliability

The product-moment correlation on the two occasions with a 3–5 months interval for the 84 children of the primary schools (with ratings made by two different teachers) was 0·50 for the total scores, compared to 0·72 reported by Rutter (1967), 0·07 for the neurotic sub-score and 0·62 for the antisocial sub-score. All but

TABLE 1. TEST–RETEST AND INTER-RATER RELIABILITY ON TOTAL SCORE, NEUROTIC AND ANTISOCIAL SUB-SCORES IN DIFFERENT GROUPS OF CHILDREN OF THE PRIMARY AND SECONDARY SCHOOLS

	Test–retest* Primary schools (148 children)		Inter-rater* Primary schools (84 children—2 raters)		Inter-rater† Secondary schools (186 children—3 raters)	
	r	P	r	P	r_4	P
Total score	0·80	< 0·001	0·50	< 0·001	0·73	< 0·001
Neurotic sub-score	0·68	< 0·001	0·07	n.s.	0·35	< 0·001
Antisocial sub-score	0·72	< 0·001	0·62	< 0·001	0·72	< 0·001

*Product-moment correlations.

†Coefficients of agreement derived from a three-way analysis of variance (the dimensions being raters, children and items), according to Maxwell and Pilliner (1968).

TABLE 2. TEST–RETEST AND INTER-RATER RELIABILITY ON SINGLE ITEMS IN DIFFERENT GROUPS OF CHILDREN OF THE PRIMARY AND SECONDARY SCHOOLS

	Test–retest† Primary schools (148 children)		Inter-rater† Primary schools (84 children—2 raters)		Inter-rater‡ Secondary schools (186 children—3 raters)	
Item	r	P	r	P	r_1	P
1. Restless/overactive	0·75	***	0·52	***	0·78	***
2. Truants	0·76	***	0·43	***	0·79	***
3. Fidgety/squirmy	0·66	***	0·37	***	0·84	***
4. Destructive	0·63	***	0·43	***	0·31	***
5. Fights	0·59	***	0·51	***	0·52	***
6. Not liked	0·33	***	−0·04	n.s.	0·95	***
7. Worried	0·59	***	−0·03	n.s.	0·30	***
8. Solitary	0·53	***	−0·01	n.s.	0·57	***
9. Irritable	0·65	***	0·51	***	0·60	***
10. Miserable	0·53	***	−0·10	n.s.	0·24	***
11. Twitches	0·58	***	0·38	***	0·85	***
12. Sucks thumb	0·78	***	0·31	**	0·87	***
13. Bites nails	0·74	***	−0·10	n.s.	0·48	***
14. Off school for trivial reasons	0·59	***	0·08	n.s.	0·79	***
15. Disobedient	0·74	***	0·22	*	0·61	***
16. Poor concentration	0·80	***	0·18	n.s.	0·55	***
17. Fearful	0·61	***	0·11	n.s.	0·57	***
18. Fussy	0·44	***	0·16	n.s.	0·28	***
19. Lies	0·53	***	0·16	n.s.	0·13	n.s.
20. Steals	0·48	***	0·69	***	0·88	***
21. Wets or soils	0·85	***	0·57	***	1	§
22. Aches and pain	0·63	***	−0·02	n.s.	0·56	***
23. Tears on arrival at school	0·75	***	0·48	***	1	§
24. Stutter	0·80	***	0·35	**	0·85	***
25. Other speech disorders	0·55	***	0·26	*	0·56	***
26. Bullies	0·63	***	0·64	***	0·85	***

*$P < 0{\cdot}05$. **$P < 0{\cdot}01$. ***$P < 0{\cdot}001$.

†Product-moment correlations.

‡Coefficients of agreement derived from a two-way analysis of variance (the dimensions being raters and children), according to Maxwell and Pilliner (1968).

§Perfect agreement on absence of behaviour.

the neurotic score correlation were significant ($P < 0{\cdot}001$) (Table 1). Product-moment correlations for single items ranged from −0·10 to 0·64, only 15 out of the 26 items being significant (Table 2). Three of the 11 non-significant items belong to the neurotic sub-score (item No. 7 "often worried", No. 10 "miserable", No. 17 "fearful") and only one to the antisocial sub-score (No. 19 "lies").

The coefficients of agreement for the 186 children of the secondary schools (with ratings made by three different teachers at the same time) were 0·73, 0·35 and 0·72 for the total score, the neurotic and the antisocial sub-scores, respectively ($P < 0{\cdot}001$) (Table 1). For the single items, coefficients of agreement ranged from 0·13 to 0·95, only item No. 19 ("lies") being not significant. For two items (No. 21 "wets or soils" and No. 23 "tears on arrival at school") there was perfect agreement on absence of these behaviours, as was to be expected for children of this age range.

Discriminative power

In agreement with the results of Rutter (1967) the best discrimination between clinic and non-clinic children was obtained with a total score of nine or more. About 73 per cent of the boys and 100 per cent of the girls in the clinic sample obtained scores of nine or greater, compared to 11·9 per cent of boys and 5·5 per cent of girls in the general population. In this way 34 out of 41 clinic cases were correctly identified by the questionnaire (sensitivity of 0·83).

TABLE 3. DISCRIMINATION BETWEEN NEUROTIC CHILDREN AND ANTISOCIAL CHILDREN (WITHIN CLINICAL SAMPLE)*

Clinical diagnosis	Agreement between clinical diagnosis and scale diagnosis No. agreements	Total No.	Percentage
Neurotic children	6	9	66·7
Antisocial children	21	25†	84

*Only children with total score of nine or more included.

†Two girls, with the clinical diagnosis of behavioural disorder, obtained equal neurotic and antisocial sub-scores and resulted "undifferentiated" at the scale diagnosis.

In 84 per cent of antisocial children and about 67 per cent of neurotic children the questionnaire diagnosis and the clinical diagnosis were in agreement (Table 3), compared to 90 and 80 per cent respectively reported by Rutter (1967). Two girls of our clinic sample with a total score greater than nine and a clinical diagnosis of behavioural disorder obtained equal neurotic and antisocial sub-scores and remained undifferentiated by the questionnaire. Rutter *et al.* (1970) showed the undifferentiated or mixed disorder group to resemble the antisocial group rather than the neurotic group; considering therefore the "undifferentiated" scale diagnosis equivalent to the "antisocial disorder" scale diagnosis, the agreement between clinical judgment and questionnaire in diagnosing antisocial children in our clinic sample rises to 91·3 per cent.

DISCUSSION

When used in an Italian sample of primary school children aged between 6 and 10 years the translated version of the scale shows a satisfactory test–retest reliability for the total score as well as for the two sub-scores and for individual items in spite of the rather long time interval between the two assessments. The inter-rater reliability is somewhat less satisfactory: although there is a better than chance agreement on the total score and antisocial sub-score there is no agreement on the neurotic sub-score and on 11 out of the 26 items. These items were neurotic in nature or describing affective states like "worried", "miserable" and "fearful". In fact these three belong to the neurotic sub-score; on the other hand the item "tears on arrival at school", although belonging to the same sub-score, shows a fair agreement probably because based on less inferences than the other three which indeed need considerable skills in observation (Rutter and Graham, 1968). Other items with low agreement describe behaviours whose observation is more likely to involve different tolerance thresholds of teachers, for example "absence from school for trivial reasons", "disobedient", "poor concentration", "fussy", "lying" and "complaining of aches and pain". As expected agreement was highest for items which described motor or habit behaviour or which are of an antisocial nature like "overactivity", "fidgety", "irritable", "mannerism", "stuttering", "bullies", "fighting", "destructive", "stealing" and "wetting or soiling". An exception are the items "bites nails" and "solitary", which require rather straightforward observation and whose low agreement is therefore difficult to explain.

While the different characteristics of the individual behaviour items and their eventual situation specificity (child–single teacher interaction) may partly explain their low inter-rater agreement, other hypotheses have to be considered. All the teachers did the ratings independently; they were not seen together and no other instructions for rating than those printed on the questionnaire (Rutter, 1967) were given to them; they had therefore no common criterion available. Furthermore, the second raters, knowing the children only "moderately" or "not very well" at the beginning of a new school year, were at a disadvantage to the first raters who, having rated the children at the end of the preceding school term, had all said they knew them "very well". The questionnaire was translated only one way (from English into Italian) and the accuracy of translation was not checked by retranslating the questionnaire into the original language. The possibility therefore that some items have lower inter-rater reliability because translated less satisfactorily than others, cannot be excluded. Another explanation for the low agreement found for some items is that children might have changed during the time interval between the two ratings. This hypothesis is less likely because the same items showed a good reliability on test–retest in a similar sample of children with the same time interval between ratings. Lastly, the reliability of the single items might depend on their frequency of observation, more frequent behaviours being more reliable to observe. This may be excluded because the inter-rater coefficients of agreement on every item were unrelated to their frequency found in another sample of 285 school children of the same age ($r = -0{\cdot}20$; $d.f. = 24$; n.s.).

Inter-rater reliability using the ratings of three raters done independently at the same time period for the secondary school children (age range 11–13 years) was satisfactory for the total score and the antisocial sub-score. Also here the neurotic sub-score showed the lowest reliability, although still better than chance. Agreement on individual items on the whole was good, with the exception of the items "lying".

Here again the reliability was somewhat lower for items which are neurotic in nature.

These more satisfactory results in terms of inter-rater agreement could be due to the fact that ratings were done concurrently and that all teachers said they knew all the children equally well. Furthermore, the different age range of this sample has to be considered; older children are probably for teachers more reliable to assess than younger ones, having developed more stable behaviour and personality characteristics.

In the Italian version of the scale a total score of nine or more was the best cutting score in discriminating the clinic and non-clinic children. The sensitivity of the questionnaire, i.e. its capacity to pick out valid positives, was 0·83. Probably many teachers who rated the clinic children knew they were in treatment and this bias could have influenced the ratings, resulting in higher total scores. Rutter (1967), however, was able to show for his samples that the discrimination capacity of the scale was independent of the teacher's awareness of the child's clinic attendance.

Furthermore, our results confirm the efficiency of the scale in differentiating children with neurotic or antisocial disorders. On the other hand, the efficiency of the Italian version of the scale to detect valid negatives (specificity), using the validity criterion of a semi-structured interview with the child (Rutter and Graham, 1968), has not yet been determined.

In conclusion the Italian version of the "Children's Behaviour Questionnaire" has shown to be reliable in terms of both total and antisocial scores and to be a fairly valid discriminator between neurotic and antisocial conditions. Caution is needed in the use of the neurotic score as well as of some of the single item scores. This points to the need to reformulate the items with lowest reliability and the importance of special attention to these items when discussing common standards of evaluation with teachers.

SUMMARY

An Italian version of the "Children's Behaviour Questionnaire" was completed by teachers of 461 children aged 6–13 years in some primary and secondary schools of Verona City. Good re-test and inter-rater reliability were demonstrated for the total score, the antisocial sub-score and most of the single items, the neurotic sub-score yielding lower coefficients of agreement.

Completed questionnaires were obtained for 41 children of the same age range attending Child Guidance Centers. A total score of 9 or more was confirmed as the best discriminator between clinic and non-clinic children. The scale showed a sensitivity of 0·83 and a fairly valid discriminative power between neurotic and antisocial conditions. Preliminary results are discussed and suggestions for the use of this questionnaire in Italian samples are outlined.

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ANNOTATION

THE PROGNOSIS OF CHILD ABUSE

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EARLY papers on child abuse, concerned mainly with the identification of physically abused children expressed outcome in terms of death, recurrent injury and permanent damage. In Henry Kempe's paper published in 1962 where he first used the term "battered child syndrome" the prognosis for the physically abused child was simply and starkly stated—11% dead and 28% permanently injured. Mortality rates in published studies on both sides of the Atlantic have, over the succeeding 15 years, continued to be depressingly high. The majority of these children have been brought to the hospital dead or dying without previously being identified as abused. However, a careful perusal of the child's previous history will often reveal minor unexplained injuries—the open warnings described by Ounsted (Ounsted and Lynch, 1976).

Once the diagnosis has been made, follow-up studies should provide us with information on the likely subsequent development of abused children. The results of published studies need careful interpretation. The sample identified for inclusion in a researcher's study will depend on his definition of abuse and the population available for him to study. The criteria for including children in follow-up studies are almost as numerous as the studies themselves. For example, Elmer and Gregg's (1967) study had an initial sample of 50 children all of whom had multiple skeletal injuries. Martin *et al.* (1974) included all inflicted injuries however mild. Other researchers have included poisoning, hypothermia and failure to thrive (McRae *et al.*, 1973), and neglect (Morse *et al.*, 1970; Birrell and Birrell, 1968). The one common factor in all studies is that some professional somewhere recorded that a child had, in his considered opinion, been abused.

The location of the sample of abused children may well limit the type of abuse considered and influence the outcome. For example, cases identified in the Accident and Emergency Department inevitably will include more examples of life-threatening injury. It is also possible that the characteristics of the population from which the sample is drawn may have more influence on the research results than the actual abuse. Elmer (1977) followed up a group of traumatized infants referred to the Children's Hospital in Pittsburgh. She compared them 8 years later with controls matched for age, sex, race and social economic status. Looking at multiple variables in their development she found few differences. One interpretation of her findings is that the underlying problems confronting all the families due to their severe poverty state overpowered any specific effect of the abused *per se*.

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The results finally presented for publication will be based on data collected only on those members of the original sample who can be located and evaluated. On reviewing the literature an alarming number of children in the original sample were not available for assessment. Martin *et al.* in their valuable and much-quoted 1974 study, originally ascertained 159 abused children referred to Denver hospitals. The minimum period of follow-up was one year. Twenty-five per cent of the sample were completely lost and a further 38% were not assessed for a variety of reasons. Thus, they finally saw only 37% of the sample.

Martin's experience is not exceptional. Other researchers have found similar problems (Birrell and Birrell, 1968; Elmer and Gregg, 1967; McRae *et al.*, 1973). We can never know if the characteristics of the families not evaluated were similar to those who are easily located and cooperative. When considering the large number of lost children in research samples one is forced to ask the question "Are these families receiving appropriate services and treatment?" Despite the problems of drawing general conclusions about the prognosis of child abuse from the data presented in the literature it is very plain that the outlook for many abused children and their families is grim.

DEATH

Published follow-up studies of abused children all quote low death rates. These are children who have survived the presenting injury. Therefore, mortality rates include death from subsequent injury, the long-term consequences of abuse and death from apparently unrelated causes. One would like to believe that these low rates indicate that once a child has been identified as abused and some intervention, however minimal, has occurred his chances of survival are greatly increased. However, we must remember that the majority of deaths like the majority of severe batterings occur in the younger child. Growing older itself would decrease the chances of death from re-injury. The follow-up studies often do not differentiate between children who have returned home and those who have remained in care. The follow-up figures may also be biased in another way: how many of the untraceable children were already dead? Several studies have found an increased rate of suspicious death among the siblings of the index abused child. Usually, but not always, these deaths have occurred before the family was identified as one in which there was abuse.

SUBSEQUENT INJURY

Subsequent injury rates are still used by many as the sole criterion for assessing effective intervention, but they can easily be misinterpreted, especially when trying to relate them to the effects of intervention. Reporting re-abuse rates without considering the severity of the injuries will give a depressing and false picture of the effect of the intervention. Even very mild inflicted injury will be detected in a family which continues to receive treatment. In contrast, those who are now known to therapists will only be identified if the abuse requires medical attention. Indeed, evaluation of comprehensive treatment programmes is now making it clear that it should be possible to prevent the serious re-injury of any abused child (Lynch and Ounsted, 1976; Martin, 1976).

PERMANENT PHYSICAL DAMAGE

One can be certain that many inflicted injuries will leave life-long scars and deformities. Many abused children will suffer permanent neurological damage. However, one can rarely be certain that a child's neurological status some years after identification is the results of physical abuse alone. The child may have had some neurological deficit prior to the abuse, indeed it may have been a precipitating factor. After neurological damage has been inflicted its effect can be modified by the treatment and long-term care the child receives. All follow-up studies looking at the neurology of physically abused children have found a high incidence of abnormality. Martin *et al.* (1974), carefully defining the degree of handicap, found 53% of their children to have some neurological abnormality. For one-third of these the handicap was severe. The overall figure from our own follow-up of abused children in Oxford is likely to be equally high but less of our children are experiencing severe handicap. However, even the children with minor signs or clumsiness will be at a disadvantage. In school they are poor at sports—a further blow to the abused child's fragile self-esteem. Severe neurological dysfunction is closely related to delayed development and a history of head trauma. However, some children with head trauma do escape without retardation or neurological handicap. On the other hand, there are children with retardation and neurological handicap with no documented history of head trauma. Many of these were undoubtedly victims of recurrent severe shaking.

Permanent visual impairment can occur as the result of the intraocular bleeding that commonly accompanies subdural and other intraocular bleeding. Often this takes the form of transient retinal haemorrhages, but can result in retinal scarring, squints and loss of visual acuity. Later, at follow-up, optic atrophy can be found to have developed (Harcourt and Hopkins, 1971; Mushin, 1971).

GROWTH FAILURE

Failure to thrive often accompanies child abuse. Heights and weight records should be kept on all the children in the family as subsequent growth patterns often reflect the well-being or otherwise of the whole family. In the follow-up studies reporting on growth there is a high incidence of continuing growth failure. A quarter of the children in Elmer and Gregg's (1967) study were found to be below the third centile for height and/or weight on follow-up. Martin found a third of the children in his 1972 study to be below the third centile. In his later 1974 study, a third of the children had shown evidence of growth retardation at identification and at the follow-up a half of these still had poor physical growth. Martin also documented the head circumference measurements both at identification and at follow-up. Of the children, 14% of the sample had been microcephalic at the time of abuse, i.e. their head circumferences were two or more standard deviations below the mean. At follow-up three children remained microcephalic, five having recovered. Microcephaly, like under-nutrition, carries a poor intellectual prognosis.

INTELLECTUAL RETARDATION

If assessed developmentally at the time of identification, many abused children show overall poor performance. Almost universally there is delay in speech development. Two main patterns of development are typical of children from abusing families (Lynch *et al.*, in preparation). First, there are those children who are silent, still and under-achieving in all areas, the extreme example being the child with frozen watchfulness (Ounsted, 1972). Then there are the children who are agile and socially competent but still silent. Such behaviour is frequently shown by physically unharmed siblings. For some children this is undoubtedly in response to their parents' demands for early mobility and physical independence without being a noisy nuisance. Often such behaviour continues and is found on follow-up among children from abusing families of all socio-economic groups. It is similar to that described by Malone (1966) in a group of "multi-problem skid row families".

When given formal I.Q. tests many abused children are difficult to assess and do poorly. For example, Elmer and Gregg (1967) found 57% of their sample to have I.Q.s below 80. Morse *et al.* (1970) considered 42% of his sample to be "mentally retarded". Martin in his 1972 study had 33% with I.Q.s below 80. Forty-three per cent of those who were not retarded still showed language disabilities. Subsequently, Martin *et al.* (1974) in a study of 58 children, found 35% to have I.Q.s below 85. He showed that brain damage, neurological handicaps and the quality of the child's home all independently affected the scores. Nine of 24 children in school with no neurological or intellectual handicap nevertheless had learning problems. It must not be forgotten that child abuse can result in a child having to live out his life in an institution for the mentally retarded (Buchanan and Oliver, 1977; Eppler and Brown, 1976).

PERSONALITY AND BEHAVIOUR PROBLEMS

The feature which is often most striking to therapist and researcher alike is the abused child's inability to relax and enjoy himself. Even at a very young age many children seem to be following in their parent's footsteps. When Martin and Beezley (1977) studied the behaviour of 50 children 4½ years after abuse, over half were described as having low self-esteem and types of behaviour which made peers, parents and teachers reject them. Often by the time they reach primary school these children are socially isolated and identified as "hostile" by their teachers (Roberts *et al.*, 1978). Environmental factors seem to correlate with emotional disturbance in the abused child, while type or severity of the injury do not. It seems likely therefore that many of the siblings will have similar problems.

The reasons for the poor outcome for many abused children can best be understood by taking the developmental approach to the problem of child abuse (Lynch, 1976; Martin, 1976). In every case a series of interrelated adverse social and medical events leads up to the actual abuse. The injury can never be considered as if it were a chance happening in an otherwise normal child. The characteristics of abusing parents, their diffuse social problems, the increased incidence of ill-health in them and in their children are all associated with developmental problems. Abusing parents' attitudes towards child rearing, their rigidity, intolerance and unrealistic expectations are likely to produce further developmental and behavioural problems. All too frequently the child's biography continues to be deviant after identification. Hospitalization, delays while case conferences are convened, legal action considered, attempts at treatment, trials at home, can all have detrimental effects on the child's development. It has become apparent that while parents can respond positively to intervention and no longer abuse their child, they do not thereby automatically gain knowledge of how to rear their children successfully. If the abused child is placed outside his natural family then he is in a high-risk group for both fostering and adoption breakdown (Parker, 1966; Loadman and McRae, 1977), which will have devastating effects on his emotional development. A team of researchers from the N.S.P.C.C. (Baher *et al.,* 1976) came to this conclusion—"Whether the child is removed from home or remains with his family, it is likely that specific and intensive therapeutic intervention will be required if there is to be any chance of undoing the long-term distortion in a child's relationship with the mother". Yet for many families the only help given is emergency medical treatment for the child and social casework for the parents. The child may not even have a developmental history taken or be assessed. The caseworker will have been trained to expect her therapeutic relationship with the mother to filter through to resolve all the family's problems (Roberts, 1978). Direct subsequent concern over the child is restricted to detecting further possible "non-accidental injury". This preoccupation with physical injuries makes medical and social personnel ignore developmental delay and behaviour problems which would normally evoke their concern. When recognized, investigation or treatment may not be suggested because of fear of parental response.

If the prognosis of child abuse is to improve, those working with these families must be prepared to look behind and beyond the overt abuse and be prepared to commit themselves to more than "crisis intervention". Tragically, the children themselves frequently seem to be more aware of the reality of their predicament than the authorities caring for them: in the words of a hard-to-place ESN 8 year old I met in a children's home recently—"Nobody bloody wants me".

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ANNOTATION

RETARDATION IN MATHEMATICS: A CONSIDERATION OF MULTI-FACTORIAL DETERMINATION

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PREVALENCE

COMPARED to research on reading, work on the learning of mathematics has been sparse. There is no single mathematics test which has the universal application of the commonly used reading scales. Although a start has been made by the Department of Education and Science at establishing prevalence rates (Selby, personal communication), there are at the moment no available figures on the prevalence either of exceptionally successful or exceptionally unsuccessful mathematicians (Fielker, personal communication).

In part this ignorance is due to the notorious difficulty of assessing mathematics at a national level. The outcome skill of reading is more or less the same whatever the teaching method used but the introduction of New Maths, with its vectors, sets and bases has led to a situation where two schools within a couple of miles of each other might be following quite different curricula. The lack of attention to assessment is also due in part to the low social standing of mathematics: most people would try to hide an inability to read but feel socially safe to admit difficulty with mathematics.

THE NATURE OF MATHEMATICAL ABILITY

It seems possible to distinguish two levels in mathematical work, elementary mathematics which most people can at least tackle, and advanced or creative mathematics. There is no disagreement that the higher form requires a special ability but a difference of opinion exists on whether there is any type of special mathematical ability necessary to do well at lower levels. Correlational and factor analytic techniques have shown mathematical success to be associated largely with general intelligence, but when this general factor is removed there is frequent evidence for a specialized ability (Rogers, 1918; Barakat, 1951; Hamza, 1952; Werdelin, 1958). The Russian authority Kruteskii (1976), basing his conclusion on the most far-reaching survey of the literature so far published, is unequivocal: "There appears to be every basis for speaking of special, specific abilities".

CAUSES OF MATHEMATICAL DIFFICULTY

1. *Emotional factors*

Lynn (1957) and Feldhusen and Klausmeier (1962) offer experimental evidence

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that anxious children are less good at mathematics than at reading, a finding noted earlier by Burt (1937). Skemp (1971) invokes the Yerkes–Dodson law to state that for learning of mathematics one needs an optimal level of anxiety. A more extreme view of emotional causation can be found in psychoanalytic writing: Plank and Plank (1954) refer to Freud's postulation of the unconscious symbolic meaning of certain numbers. They go on to claim that success in mathematics is related to early maternal relationships, "The learning of mathematics becomes blocked where the first and strongest object relationship cannot be renounced . . . where the strong pre-oedipal tie to the mother continues intact". Their case is, however, based on anecdotal, biographical evidence; and evidence for such explanation having wide application is lacking.

2. *Socio-economic factors*

Mathematical ability is no exception to the frequently noted association between attainment and socio-economic factors. Barakat (1951), despite having restricted his sample to children in selective schools, found poor areas producing poor mathamaticians. Choat (1974) has graphically described the problems encountered by some young children: "It is hardly surprising when a child's mind is occupied with survival, as it may well be for many disadvantaged children, that his mathematical development is retarded".

3. *Poor teaching*

Teachers and colleges of education have been criticized for a failure to meet demands made on them (Wilson, 1961; Ollerenshaw, 1977), while Thwaites (1960) suggested that the teaching of mathematics was doomed: "The truth is that the whole profession of mathematics is like a very sick man, a man in a high fever and still restlessly active, but suffering even so from a wasting disease . . . if no recovery in fact comes about, mathematical education as it exists today is likely to die a natural death within twenty years". Death has been averted but there is still a shortage of teachers of mathematics. In the teaching of mathematics two crucial elements need to be grasped: mathematics is a hierarchical skill and involves no redundancy. The hierarchical nature of the subject implies that learning one step is dependent upon an understanding of earlier steps. This is in contrast to a subject such as history where an appreciation of the Tudors is not dependent on having studied the Romans. The lack of redundancy means that children have to attend to every bit of information given. This, in turn, can be contrasted with reading where it is possible to skim over letters or whole words and still make adequate sense of a passage. If teachers are unaware of these characteristics of mathematics their teaching will be the poorer.

4. *Cognitive factors*

Several investigations have attempted to break down the presumed special mathematical ability into component parts. Kruteskii (1976) for example, felt that memory is often related to attainment, noting that poor pupils have a poor memory in particular for "schemes of reasoning".

The most commonly invoked factor is spatial ability. MacFarlane Smith (1964) defining this as "the capacity to perceive and hold in mind the structure and proportions of a form or figure, grasped as a whole", sees it as a general characteristic of the thinking involved in maths. Actually he sees it as playing an increasingly important part, since he asserts that verbal ability is crucial to the earliest stages of mathematical progress. A glance at a maths exercise book confirms the spatial quality of the task. Figures are set out in rows, diagrams having crossing lines and equations have figures whose functions depend on their position in space.

A testable hypothesis arising from this observation is that children with a specific mathematical difficulty, i.e. those whose mathematics is significantly poorer than might be predicted from their measured intelligence, will do less well on performance than on verbal tasks. Experimental evidence to support this hypothesis comes from Hamza (1951), Lynn (1963), Kinsbourne and Warrington (1963) and Rourke and Finlayson (1977). Anecdotal evidence is also offered by Johnson and Myklebust (1967).

Barakat (1951) in a factor analysis of over 300 children aged 13–14 years, isolated both memory and spatial ability, as well as general intelligence, and noted also the existence of a factor of verbal ability. He discussed two further factors: numerical and mathematical (the ability to manipulate mathematical schemes and relationships) but points out that there is a relationship between these "other than g" factors, rote memory, for example, being allied to mechanical computation.

A link has been perceived between mathematical and spatial ability and the differential integrity of the two cerebral hemispheres (Rourke and Finlayson, in press). They studied children with low performance I.Q./low mathematical attainment and found results which were consistent with the theory that impairment of the right hemisphere can be a limiting factor with respect to arithmetic calculation performance. In particular, and at their most cautious, they argue that specific difficulties in arithmetic are due to difficulties in visual spatial organization and integration, i.e. skills thought to be subserved primarily by the right cerebral hemisphere. Their sample was, however, drawn entirely from children referred for neuro-psychological assessment because of a learning or perceptual problem and was, to that extent, biased.

5. *Sex differences*

That boys' achievement in mathematics is at a higher level than girls' is not in doubt (Lynn, 1957; Barakat, 1951; Lambert, 1960). Neither is there doubt of male superiority in spatial tasks (MacFarlane Smith, 1964; Hutt, 1972; Maccoby and Jacklin, 1974). An argument often put forward to explain boys' mathematical superiority involves a causal relationship between mathematics and spatial ability as an underlying reason. Maccoby and Jacklin (1974) reviewed the literature and point out that sex differences in spatial ability become apparent in adolescence and that from the age of 13 boys generally do also move ahead of girls in mathematics as well. If one remembers MacFarlane Smith's notion of verbal ability underlying early mathematics and spatial ability underlying later work the picture becomes at least conceptually coherent. This supplies, moreover, a possible explanation for the apparent anomaly that arithmetic loads more highly on the verbal than performance part of the WISC for both questions and answers on that subtest are entirely verbal.

What is not clear is the part played by environmental factors in sex differences. Maccoby and Jacklin (1974) quote studies showing that sex differences in spatial tasks do not exist in all cultures (they are absent, for example among Eskimo children), but their conclusion is cautious: "We note only that the cross-cultural evidence available to date is consistent with the hypothesis that child rearing practices, and the social roles assigned to the two sexes, affect the degree to which the sexes differ in spatial ability".

6. *Dyscalculia*

If children who are able to tackle all school subjects except reading are called, by some, dyslexic, should we not label those who are good at everything except mathematics "dyscalculic"? If the history of the concept of dyslexia be followed the answer to that question is probably "no", for recent work has cast doubt on the value of a single, genetically distinct syndrome of dyslexia (Rutter and Yule, 1975). Instead, the concept of specific reading retardation has been put forward. This refers to a disability in reading and spelling relative to the child's general intellectual level. It occurs at a rate above that predicted on a statistical basis, i.e. there is a "hump" at the bottom end of a normal curve. The difference between "dyslexia" and "specific reading retardation" is, however, esentially that the latter is seen as multi-factorial in origin.

Unfortunately, a comparison of reading with mathematics in this context must at the moment remain speculative. It is known that some adults who have suffered neurological damage have problems in manipulating numbers (Henschen, 1920; Cohn, 1961) but it is not possible to extrapolate to neurologically intact children. Anecdotal accounts of children with severe and apparently specific difficulty exist in the literature (Johnson and Myklebust, 1967) and Skemp (1971) have discussed them, but so far no systematic attempt has been made to identify or describe children with such problems.

Given the evidence on possible causes noted above it is, however, possible to put forward a tentative description of specific mathematical retardation. It seems likely that some children are born with a deficiency in the ability to discriminate and manipulate spatial and numerical relationships and thus lack the fundamental tools of mathematics (Kruteskii, 1976). These children may make some progress at first by use of rote learning but sooner or later they will find mathematics difficult. The more intelligent they are the more concerned they will be that they cannot find a scheme into which to fit new mathematical information (Skemp, 1971). Anxiety is then generated. If the child then encounters a poor teacher, and there are complicating factors related to socio-economic conditions, there is likely to be an interaction which will result in a child who is seen by everyone, including himself, as being not very good at sums. There is an urgent need to identify such children in an epidemiological rather than an anecdotal framework and then to investigate some of the factors that appear to contribute to their difficulty.

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CRITICAL NOTICE

Fit for the Future: Report of the Committee on the Child Health Services. (The Court Report). Vols. I and II. H.M.S.O., London, 1976. Vol. I—448 pp. Vol. II—222 pp. £6.50 and £4.00

When the intention to review the child health services was announced in 1972, legislation to reorganize the Social Services, Local Government and the National Health Service was already being prepared. There had been no preceding study of the opportunities that might arise for child health and the Committee which began work in 1973 had the following terms of reference: "to review the provision made for the health services for children, up to and through school life; to study the use made of these services by children and their parents and to make recommendations".

Much anxiety among staff and some deterioration in the community child health services would have been avoided if the Report had been available prior to reorganization of the Health Service. There was a reprehensible lack of foresight but it was not the fault of the Committee and inevitably made its work more difficult. The Chairman must have been under considerable pressure because he was reminded in the medical press and elsewhere of the urgent need to publish recommendations. Under the circumstances, the Report is all the more remarkable because, as a review of child health in England and Wales, it is without parallel.

The most important problem in this country at present is the adverse effect on children of deprivation and disadvantage. It is acknowledged in the Report that future improvements in the health of children depend as much on the beliefs and behaviour of parents as on the services provided and few would dissent from the assertion that "we have found no better way to raise a child than to reinforce the ability of his parent(s), whether natural or substitute, to do so". In its analysis of contemporary society, the Report does not ignore the realities of divorce, illegitimacy and parental employment and states explicitly that "the majority have exchanged stability for prosperity" while "the minority remain as disadvantaged as ever". Services, therefore, have to provide some care instead of families, but they should do so in a way that supports rather than denigrates them. This philosophy is central to the Committee's proposals.

General Practitioner Paediatricians

A recurring theme in the Report is a view previously published by Professor Court that there should not be a separation of preventive and therapeutic services. From this it follows that many of the tasks formerly undertaken by Local Authority clinicians will need to be done either by family practitioners or by a single paediatric service embracing both primary and hospital care. The Committee not only rejected the latter but, contrary to the practice in most developed countries, also rejected total paediatric specialization within primary care. Instead they opted for comprehensive primary care based on family practice with some general practitioners having special interests and duties in paediatrics. They coined the title General Practitioner Paediatrician and it envisaged that about 70% of his time will be spent with children. In addition to the normal paediatric work of family practice, it suggested that he should contract with the Area Health Authority to provide not less than two sessions per week in specified schools, child health clinics or social service premises in his locality, and it outlined a requirement for more extensive training than is at present included in most vocational training schemes.

A small part of the preventive service is being provided at present by General Practitioners, and there has been a slow but gradual increase in their involvement during the past two decades. The Committee did not recommend a change of direction but simply the acceleration of an existing trend and its formalization. It is doubtful whether the change can take place rapidly enough and there is a dilemma partly created by the publication of the Report. Recruitment to the preventive child health services, already difficult, is likely to get worse because of the recommendations. Unless a transfer of their functions to the family practitioner service can be made very soon, a satisfactory career structure

Many comments are made about training and if the recommendations are to be implemented, this will inevitably occupy a great deal of the time of the Consultant Child Psychiatrists at present in post. Apart from the requirement to teach doctors who will fill the future enlarged establishment of Consultants, it is suggested that more psychiatry should be included in the curricula of medical undergraduates and of trainee Child Health Visitors and paediatricians. It seems likely that if these proposals are adopted, training resources will be stretched up to or beyond the limit.

Additional to the above will be an increased need to train Child Psychiatric Nurses because an increase in their numbers is recommended. The Report recognizes that there is not just a problem of training but also one of retaining the services of the best nurses. It urges a proper career structure and a modification of salary scales so that those who wish to remain in clinical work are not penalized. This would be welcomed by all who would like to make good the depradations of the recent reorganization of nursing.

A major recommendation is that there should not be a distinction between Child Guidance Clinics and Psychiatric Hospital Services and that there should be an integrated Child and Adolescent Psychiatry Service. It is envisaged that it would operate in a number of settings, possibly including the District Handicap Team's Assessment Centre, and that it would work closely with non-medical agencies as well as with paediatricians and psychiatrists. Interdisciplinary teams are seen as the basis for out-patient services for children with psychiatric disorder and the need for an expansion of in-patient facilities for adolescents and for severely disturbed children is recognized.

Protection and representation of children

There is a need to protect the interests of children both individually and collectively. Each child has the right to basic health care including surveillance and this may require an erosion of parental rights. The Report recommends a statutory medical examination at school entry, a right of Health Visitors to apply for a legally enforceable examination if she suspects serious ill-health for which help is not being sought and likewise for Headteachers who have reasonable grounds for concern and Local Authorities in cases of suspected abuse or neglect. When the rights of children conflict with those of parents, there is an increasing and welcome tendency for public opinion to support the child so that there is not much likelihood of objection to these proposals. Nevertheless, one wonders why the present law, if properly applied, is deemed inadequate to protect the child from neglect and injury—the problem in recent cases seems to have been a failure to use existing procedures.

Children's interests are represented by a host of voluntary and professional bodies but the Committee considered that there were deficiencies and advocated a statutory Joint Committee for Children. It suggested that this should be a subcommittee of the Personal Social Services Council and the Central Health Services Council. Fundamental needs identified were to review and co-ordinate services, influence public opinion, disseminate advice on good practice and ensure implementation of recommendations. Most of these are the objectives of voluntary bodies who have a good record of achievement and there is nothing in the Report to persuade the reader that a Statutory Committee would do any better.

The Report is a comprehensive document consisting of a main volume of 448 pp. together with a separate book of statistical tables. It contains a mass of information and 232 major recommendations. In a brief review it is only possible to make superficial comments about the main changes that are proposed and it is certain that not all of these will gain universal acclaim. There is no doubt that a sincere attempt has been made to improve child health and it would be a pity if implementation of the recommendations were to be frustrated by objections from sectional interests within the professions. A danger of this happening exists because the Report has concentrated on children and may have exceeded what is acceptable to those who serve them. Reorientation will be required of some, a great deal of effort in training will be demanded of others and an allocation of more resources will be needed from society. At a time of economic stringency the latter may be considered unrealistic but all that is asked is that an equitable share of Health Service expenditure should be devoted to children. Perhaps the most important criticism of the Report is that it was not available 5 years ago.

F. N. BAMFORD

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BOOK REVIEWS

Widening Horizons of Child Health (1st Edition). Alfred White Franklin. MTP Press Ltd, St. Leonard's House, Lancaster, 1976, pp. iv + 279.

This book is a result of the deliberations of a Joint Working Party set up between the Royal College of Physicians and the British Paediatric Association and the Society of Medical Officers of Health as far back as 1968. Its main object was to identify the needs for the proper provision of child care in a changing community and with changing patterns of disease. In an attempt to try and identify these patterns, the needs for children have been correlated with statistical evidence and disease classifications available at that time. The book is elegantly written, as one would have expected from its author, and the subjects discussed cover such topics as Psychiatric Health, School Health, Dental Care, the Contribution of the General Practitioner and the Problems of Immigrant Children, in addition to the more usual chapters based upon common and some of the more esoteric children's diseases.

It is unfortunate that the publication of this book has taken so long because if it had preceded the publication of the Child Health Services Committee's report "Fit for the Future" (Chairman—Donald Court) then it would have been thought to be revolutionary and visionary in its approach. I am sure that if some of the more refined statistical information available in Volume II of the Court Report had been available to the author then he would have been able to define some of the needs more closely. This is a book which should be read by Paediatricians and family doctors, particularly those who, while not wishing to be called General Practitioner Paediatricians, still wish to take an active interest in children and run their own developmental and assessment clinics.

Christopher H. Nourse

The Self and Autism. Vol. 3. Library of Analytical Psychology. Michael Fordham. Heinemann Medical Books Ltd, London, 1976, pp. 296. £8.50.

Jungian theory like that of Freudian psycho-analysis suffered because its founder drew most of his findings from work with adult patients. In the psycho-analytic field this lack of work with children has been remedied by Anna Freud and Melanie Klein; Michael Fordham has done a similar service for Jung. Obviously, he has had a struggle with the "die-hards" who were worried by changes from the "Master's" original formulations. *The Self and Autism* records these struggles and gives us Fordham's original contributions to Jungian theory. For this, it is to be recommended. But it has another interest in that, in it, Fordham relates his formulations to his work with psychotic children. For many years, those of us who have worked in the field of childhood psychosis have been waiting for a book by Fordham on this topic for, from his papers, we knew that his thinking arose out of first-hand observations, honest recounting and hard thinking. This book bears out all that his papers had promised and, as such, is extremely valuable.

Fordham begins the book by describing his own original contribution to the theory of the "Self". In relation to this he develops his concept of "deintegration". In Fordham's view the "self" is the original psycho-somatic unity in which the infant is not related to the mother. Expressed vernacularly it is what the infant comes with, as distinct from what he picks up. In Fordham's view this "self" forms a root pattern for the infant's growing independence of the mother.

In describing "deintegration" Fordham postulates a unitary perceptual system into which perceptual input is organized. He sees this global unitary perception as being the original self. Later he says that this "deintegrates" into specific clear perception. This deintegration paves the way for all psychic structures as they differentiate in the course of growth. As such, it is a constructive "breaking down" (as distinct from disintegration which is a destructive process). He writes:

"In satisfactory development the unstable periods correspond to periods of *deintegration* in which increasingly defined structures are brought into being or into new relationships with each other. In the stable periods, the new advances are integrated and brought firmly together in the service of the whole . . . ."

By presenting detailed case studies Fordham makes an interesting application of his theories to the field of Childhood Psychosis. Clinical material is always fascinating to a therapist and Fordham's material is recorded with great honesty. It is not possible in the space of a short review to do justice to its richness but I recommend that the reader should study it for himself.

To pick up some theoretical points, some of which have practical implications, from this section on psychosis: I share Fordham's doubts about the value of extending the use of the biological term "symbiosis" to cover human situations, especially as it is often used for pathological situations in which the partners do not live together in a way which is mutually beneficial. It seems regrettable that this term is increasingly creeping into clinical vocabulary where it is often used much more loosely than Mahler intended it to be.

I am also glad that he disposes of the commonly held view that autistic children have a rich fantasy life. Those of us who have worked intensively with such children know that nothing could be further from the truth.

I am also beginning to share the view stated by Fordham on p. 75 that Child Psychoses, at first, are best treated at home. I would qualify this by saying that it depends on the type of psychosis, the age at which the child is first seen by the therapist and on the home circumstances.

However, I was surprised when on p. 79 Fordham perpetuated the notion that mutism in psychotic children is the "best indicator" of a poor prognosis. This has not been my own experience nor that of a Norwegian psychoanalyst Gerd Jacobson who has worked for many years with these children. Whether muteness is indicative of a poor prognosis would seem to depend upon the age at which the child is referred: muteness up to the age of five or six years has not been found to be intractible nor to indicate a poor prognosis.

This is not an easy book, but I would say that for those who work with psychotic children and for those who want to understand Jungian psychology better, it is a "must". In it, there is a rich harvest of a lifetime's experiences of an original thinker and a distinguished psychiatrist and psychotherapist. It deserves the respect which throughout the book the author always accords to other people's work.

FRANCES TUSTIN

Educating Maladjusted Children. R. LASLETT. Crosby, Lockwood, Staples, London, 1977, pp. 269. £7.50.

THIS APPEARS to have been designed as a companion volume to Bridgeland's (1971) uncritical review of the early beginnings of work with children called maladjusted. In ten chapters spanning 241 pp., the book is "for teachers and teachers in training who wish to know why maladjusted children behave in the ways that they do, and how they can best help them", in both special and ordinary schools. The author is a sincere and committed educator, but his attempt to make available to others the knowledge developed in the educational specialism known as maladjustment gives rise to some misgivings.

There are two disquieting aspects to this book. First, it inadvertently perpetuates the myth which is more than administrative in origin, that children called maladjusted are maladjusted children, an esoteric group creating exclusive treatment practices. For example, the author fails to note that shared responsibility is practised by many in Free Schools, to whom the vocabulary of maladjustment is unknown or anathema, with pupils whose difficulties are labelled by state schools as truancy, delinquency and maladjustment. The philosophies and practices of schools for the maladjusted are part of a wider movement in schooling but this perspective is closed by treating them merely as the revealed inspirations of individuals. Second, there is a tendency to assume that psychological theories are professional resources for the explanation of maladjustment but that "disruptive and unruly" pupils in ordinary schools require a consideration of "sociological aspects" (p. 237). Do "changes in the social structure" (*loc. cit.*) not also affect the troubles of pupils and staff in schools for the maladjusted? Moreover, that the aim is to change pupils and often whole families, towards whatever counts as adjusted, requires at least raising inherent ethical and political questions. To say that such considerations are outside the scope of the book (p. 2) places subsequent discussion on a strange foundation.

The book falls into two main parts, the first having two chapters concerning aetiology, prevalence and provision, preceded by one outlining psychodynamic theory and social learning theory as explanations of maladjustment. There is an absence of recent research in early child development which might fill out or question the assumption of critical periods in emotional and social development. The second part is a prescriptive discussion of management, teaching, teacher stress, parental, visitor and neighbourhood relations, preparation for leaving and record keeping. These six chapters demonstrate a sensitive and sensible awareness. They will be widely read and offer considerable help in the minutiae of everyday school practice. However, it seems unhelpful to support the already widespread misuse at individual level of teacher rating scales and guides which were designed as mass screening instruments and as such offer considerable problems (Tizard, 1968; Rutter *et al.*, 1970). Similarly, is it not misleading to state that behaviour modification techniques "are not difficult to apply" in the ordinary school? (p. 233). Properly understood, behaviour modification requires detailed and informed application even in one adult/one child settings where contingencies are controllable.

A further problem in these chapters is that the discussion draws extensively on the authors unacknowledged preference for and experience in using psychodynamic and psychoanalytic theory. It may be that this preference can be shown to be well founded, but unless it is made explicit, discussed in relation to alternatives and defended, a valuable learning experience is lost to the reader. (The material is likely to be acclaimed as "natural" professional common sense.) Such theoretical underpinnings seem to be widespread—Wilson *et al.* (1977) claim that most participant schools in their current research into the education of disturbed children in special schools use "an approach mainly derived from the psychoanalytic". How many teachers are explicitly aware of this, how they learned it and the implications for possibly needing to change their practice? Further, crucial differences between psychodynamic and psychoanalytic theories, and their effects on practices, need to be made clear, as do apparent incompatibilities between these theories and learning theories. Can one really choose from a "buffet" of techniques without considering the values and presuppositions underlying them?

It is unfortunate that, by eschewing a critical and questioning approach, the author offers no way by which experienced readers might go beyond the professional assumptions they may, unwittingly, share with him, and by which novice readers may learn from a less consensual base.

IRENE BOWMAN

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Human Resources for Troubled Children. WERNER I. HALPERN and STANLEY KISSEL. John Wiley & Sons, New York, 1976, pp. vi + 263. £13.00.

A FULLER title for this book would be "A straightforward, historical account of ways American society has developed for trying to deal with problem children".

That is it, really, no more, no less. It is certainly straightforward, not to say painstaking and at times rather pedestrian as it goes from parent education to parent counselling to group treatment to analytic techniques to behaviour modification and pharmacotherapy. Each topic is covered with a great many case illustrations, most of which illuminate well the points made. When this approach comes off it is very successful, e.g. the section on Masters and Johnson. At other times, however, the authors really do try to cram too much in: conjoint family therapy is given just seven lines. The rather bland approach is made more so by an apparent reluctance either to put forward a personal view, or to report controversy in full or to link movements in psychology with other events. The lack of all three is thrown into relief on the occasions when they appear. They mention, for example, that team oriented colateral therapy has been criticised: "the therapist proceeded slowly, cautiously and thoroughly, obtaining mountains of information and incorporating as much of the data as possible into a highly complex, sophisticated but unwieldy formulation" (Quote from another source). They touch on other events: the link between totalitarianism in Europe and the American pursuits of egalitarian principles in therapy. But such flashes are rare and would have been welcomed in greater abundance. The purpose of history is, it seems to me, to explain why events took place, rather than merely how.

And it is an American book. True, the first chapter deals in its 13 pages with some Europeans (Seguin being spelt Sequin) and there are sporadic mentions of Anna Freud and Eysenck but the main thrust of each subsequent chapter is firmly centred on the other side of the Atlantic.

The last two chapters are in some ways the best. A mention of drugs in a book intended in part for a non-medical readership is welcome and they cover the field well. But again I looked for personal comment. Why, I wondered, is Ritalin used so much more in America than in Britain? I still do not know even whether Halpern and Kissel know that this is so. The last chapter is on choices—what should we offer to what children. This is really what the book is all about; there are some allusions in earlier chapters and it was disappointing to find only half a dozen pages devoted to it.

The references, though, are copious and will be most useful to anyone wishing quickly to gain some knowledge of what techniques are practised in the field.

RICHARD LANSDOWN

Learning and Perceptuo-motor Disabilities in Children. K. WEDELL. John Wiley & Sons, London, 1973, pp. vi + 138. £3.05.

"... THE classification of children with learning difficulties is an exercise of limited value ... efforts should rather be directed at analysing the nature of the deficiencies which underlie the children's educational and behavioural inadequacies" (p. 4). While this view would now be shared by the majority of psychologists involved in the assessment of young children, few have tackled the problems of learning disabilities in such a systematic and productive way as Dr. Wedell. In this book, he has chosen to discuss perceptual and perceptuo-motor functions and focuses attention on this by providing a model of the interrelationships of these functions as well as a description of their developmental process. This is followed by an evaluation of the literature on the effects of sensory and motor handicaps on the perceptual and perceptuo-motor functions. Approximately half of the book is devoted to a discussion of the implications of these findings for the behavioural and educational competence of children with these handicaps.

Among the topics discussed, there are three which appear to me to be of prime importance: (1) development of methods of assessment of learning disabilities, (2) the evaluation of methods of remediation and (3) the possibilities of the prediction of learning difficulties at pre-school level. Wedell argues that the inconclusive findings which are typical of research in this area must not be seen entirely as a consequence of the limitations of the research methods. They should be considered as indicative of the complexity of the relationships between the existence of a handicap and its manifestation in a learning situation.

Wedell expresses uneasiness that, perhaps, by limiting his study to perceptual and perceptuo-motor functions he may have obscured the view of the "whole" child. On the contrary; the approach of this book, in my opinion, actively encourages the reader to consider the effects of learning disabilities not only on the child with the handicap but on the wider social and educational environment with which he interacts.

Essential reading for all involved in the cognitive assessment of young children.

DIANE LUKEMAN

Cognitive Styles in Infancy and Early Childhood. NATHAN KOGAN. John Wiley (Lawrence Erlbaum Associates), New York, 1976, pp. xiii + 146. £9.75, $16.50.

NATHAN KOGAN has brought together both published and unpublished research on four particular cognitive styles studied in preschoolers and infants. The four are field independence–dependence, reflection–impulsivity, breadth of categorization and styles of conceptualization. Each of these is meticulously analysed in relation to the construct implied and the research. Each is found wanting in a number of respects, from lack of systematic conceptualization to inadequacies in the research strategies of investigators. The book is doubly useful in that it reviews, over each style, the assessment of preschool children, validation attempts, sex differences and possible precursors or influences, but also it provides a mine of research topics which stem from his review and critiques.

Several points clearly emerge: for example, there are usually distinct sex differences in cognitive styles and these favour girls. He notes that the relevant data strongly suggest a developmental timetable where girls are approximately 6 months to a year ahead of boys; where there is no difference there is no evidence for superiority of boys. A second point concerns both stability of styles over time and the inter-relatedness of styles with personality and socioemotional behaviours. In both cases data have been obtained usually from cross-sectional studies and by looking at one cognitive variable at a time. A longitudinal approach using a "syndrome of cognitive patterning" should provide better understanding. However, there are problems still to be solved over the validation of most of the measures. All in all, a book to be recommended.

JOHN VERSEY

Male Youths. A Sociopsychiatric Study of a Total Annual Population of Swedish Adolescent Boys. ULF OTTO. Acta Psychiatrica Scandinavica, Supplementum 264, Munksgaard, Copenhagen, 1976, pp. 312. Price not stated.

THE BULK of this book consists of data which if not exactly raw are distinctly underdone. It is a painstaking, conscientious study of just over 91% of the young men born in Sweden in 1953, who became eligible for military service and its enlistment procedures during 1971–1972. The 2-day assessment by questionnaire, interview and physical examination yielded a formidable number of pieces of information: height, weight, the wearing of spectacles, membership of political associations, psychical energy, social maturity, nail biting, ability to swim, pulmonary capacity, electrocardiogram, ability to see in the dark, possession of different sorts of driving licence (e.g. only for tractors—4·9%) and much, much more.

There were 56,840 young men in the identified group, but 9% never reached this detailed assessment, because of death, emigration or other disappearance, or serious physical or mental handicap. It is difficult to be sure of the validity of the assessments made, for little detail is given, and, for example, "psychical disturbance" is identified by someone reporting one or more of such complaints as "nervous headache, nervous stomach-ache, insomnia, nail biting, fear of open spaces, anxiety, feelings of insecurity, compulsion thoughts, concentration difficulties, irritability, depression and contact difficulties".

Dr. Otto is frank about the shortcomings of the survey. No specific questions are asked at the outset except a general indication that the focus is on the boundary between sickness and health, normal and abnormal. He begins his summary with the words "an investigation of this sort ought to make it possible to portray the typical Swedish youth of eighteen or nineteen. But anybody who has read the preceding account will understand our dilemma when confronted by such a large amount of information. The difficulty of synthesising it all is obvious".

It is difficult for the reader too. Dr. Otto does discuss his findings, but the tentative conclusions seem scanty compared with the vast array of disparate bits of data listed and tabulated here. Nevertheless, the information on the vast majority of one year's output of Swedish young men is available: in the author's concluding words "it is here ready for further studies and analysis".

DEREK STEINBERG

Psychiatry and the Paediatrician. Frederick H. Stone (Post Graduate Paediatrics Series). Butterworths, London, 1976, pp. 1–175. £6.00.

The recent arrival in bookshops of some new child psychiatry books has aroused the interest of many paediatricians and the title of this one should arouse them most. The initial impression of a paediatrician looking through this, or the larger books, is what a lot of common ground there is between the work of paediatrician and child psychiatrist. The disorders discussed in the child psychiatry books, are disorders which form most of a paediatric out-patient clinic, and are disorders which would be essential in any paediatric textbook. There is little that the paediatrician would identify as definitely beyond his practice. Unlike a book on, say, paediatric ophthalmology, he does not find a lot of new information, or new techniques and skills which only someone with different training and special equipment can master.

In some ways it is reassuring and, in others, a bit puzzling—does child psychiatry really exist? Fred (“erick” it says on the fly-leaf) Stone's book is definitely reassuring. The paediatrician reading it is tactfully coaxed into believing he can be, and already may be, competent at dealing with the common problems of child psychiatry/paediatrics. Repeatedly the author manages to praise the attitude of some paediatricians in their handling of disturbed children and families. If any child psychiatrist has to work with a really unsympathetic, authoritarian paediatrician, the gift of this book may work wonders and turn him overnight into a fount of empathy.

It is a short book, but a delightful one, to be read through rather than referred to. Early introductory chapters on emotional development and the classification and investigation of emotional disorders, are followed by longer sections on psychopathology, clinical problems and their management. It is a pity that this sensitive and pleasing book costs as much as £6.00. If it were cheaper I would give it to all my junior staff. They would certainly enjoy it, and if just a little of Dr. Stone's approach to troubled families brushed off on them, it would be worth it.

Roy Meadow

institutional care, adoption, follow-up,
behaviour problems, academic attainment

zard, **Barbara** and **Hodges, Jill** (1978) The effect of early institutional rearing on e development of eight year old children. *J. Child Psychol. Psychiat.* **19,** 99–118.

mmary—Fifty-one children who had spent their first 2–7 years in institutions, and o had been previously visited at the age of 4½ years, were reassessed at the age of 8. ven children had never left the institutions, the rest had been adopted, fostered, or tored to their biological parent. The children's behaviour during psychological ting was assessed, and information was obtained from their parents and teachers. cording to the parents' reports, the ex-institutional children did not present any more oblems than the comparison groups. The teachers, however, found many differences tween the ex-institutional children and their classmates. Despite very frequent staff anges, the institutional children were not retarded. The adopted children had the ghest mean I.Q. and reading achievements; this finding appears to be related to the gher social class of the adoptive parents and the poorer emotional adjustment of the ildren restored to their biological families.

family therapy, child patient,
brief focal therapy, method and results

nston, **Warren** and **Bentovim, Arnon** (1978) Brief focal family therapy when the ild is the referred patient—II. Methodology and results. *J. Child Psychol. Psychiat.* **19,** 9–143.

mmary—The experience of a workshop set up within a Department of Child ychiatry to foster family therapy and to develop a brief focal technique is described. etails are provided of the first 29 cases. Twenty-two families engaged in therapy and e referred child improved in 19 (87%) of these cases. Family change was measured ing a methodology developed by Malan to assess psychodynamic change in individuals d problems in adapting it are discussed. Eleven (50%) of the engaged families im- oved. The pattern of child and family improvement supported the theory that a mptomatic child can be a manifestation of family pathology. A contraindication to e brief focal approach is past or present formal mental illness in a parent. Marital sturbance was frequently covert: this affected the therapeutic plan but was not

vigilance, attentiveness,
behavior ratings, reading attainment

Kupietz, Samuel S. and **Richardson, Ellis** (1978) Children's vigilance per and inattentiveness in the classroom. *J. Child Psychol. Psychiat.* **19,** 145–154.

Summary—The current study was conducted in order to test the hypoth vigilance performance is related to children's attentiveness in a classroom Sixteen children were administered an auditory and visual vigilance task, a performance related to their "off-task" behavior in the classroom. In addi relationship of vigilance performance to teacher ratings of the children's beha to reading achievement scores was also assessed. Vigilance errors (omission a mission errors) were significantly positively correlated with off-task behavior, only weakly correlated with the other two variables. The findings support th hypothesis that vigilance performance relates to a child's ability to remain att the classroom.

minor physical anomalies (MPA),
hyperactivity, retardation, family MPA

Firestone, Philip, Peters, Susan, Rivier, Marlene and **Knights, Robert M** Minor physical anomalies in hyperactive, retarded and normal children a families. *J. Child Psychol. Psychiat.* **19,** 155–160.

Summary—Hyperactive, retarded and normal children as well as their sibl parents were examined for the frequency of minor physical anomalies (MP results indicated that the hyperactives, retardates, their siblings and parents h numbers of MPA that were significantly higher than in the normal control chil their families who did not differ from each other. It was noted that there we fathers absent due to divorce or separation in the two patient groups.

autism,
echoic memory

CHER, JILL (1978) Echoic memory capacity in autistic children. *J. Child Psychol.*
hiat. **19**, 161–166.

nmary—Capacity of echoic memory, or recency effect capacity, was assessed in a
up of relatively able autistic children and normal age-matched controls. Capacity
found to be the same for both groups and echoic memory may therefore be said to
resent a peak ability in more able autistic children. This finding is discussed in
tion to another known peak ability, namely the digit span and in relation to echoic
non-echoic components of autistic children's free recall scores.

B-scale (Rutter), questionnaire,
Italy, screening procedure

MMERMANN-TANSELLA, CHRISTA, MINGHETTI, SIMONETTA, TACCONI, ATTILIO and
NSELLA, MICHELE (1978) The children's behaviour questionnaire for completion by
chers in an Italian sample. Preliminary results. *J. Child Psychol. Psychiat.* **19,** 167–173.

mmary—An Italian version of the "Children's Behaviour Questionnaire" was
mpleted by teachers of 461 children aged 6–13 years in some primary and secondary
ools of Verona City. Good re-test and inter-rater reliability were demonstrated for
total score, the antisocial sub-score and most of the single items, the neurotic sub-
re yielding lower coefficients of agreement. Completed questionnaires were obtained
41 children of the same age range attending Child Guidance Centers. A total score
9 or more was confirmed as the best discriminator between clinic and non-clinic
ildren. The scale showed a sensitivity of 0·83 add a fairly valid discriminative power
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4/78

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EFFECTS OF VARIOUS TYPES OF SEPARATION EXPERIENCE ON RHESUS MONKEYS 5 MONTHS LATER

R. A. Hinde,* M. E. Leighton-Shapiro and L. McGinnis

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INTRODUCTION

That a period of separation between parent and child can have effects on the parent–child relationship and on the child's behaviour in the weeks following reunion is well documented (e.g. Bowlby, 1969; Robertson, 1970). The same is true in rhesus monkeys, the evidence indicating that the outcome of a separation experience may be influenced by a variety of factors (e.g. Hinde and McGinnis, 1977). Whether or not one or two separation experiences lasting a week or two can have enduring effects is less clear: Douglas' (1975) study of a cohort of children born in 1946 strongly suggests that they may, while Rutter (1976, p. 186; Quinton and Rutter, 1976) has more recently concluded "that single hospital admissions rarely have long-term sequelae, that *repeated* admissions may sometimes constitute a cumulative stress resulting in disorder but that this is most likely to occur when the multiple acute stresses are also associated with chronic psychosocial disadvantage". With rhesus monkeys there is some evidence that a week's separation experience can, in certain circumstances, produce differences from non-separated control monkeys 6 months and even 2 years later (Spencer-Booth and Hinde, 1971).

The monkey data indicate that the effects of a separation experience in the immediately ensuing weeks vary with the precise circumstances of that separation. Four issues may be mentioned. First, they vary with the nature of the mother–infant relationship: infants that, before separation, were rejected most often by their mothers and had to play the greatest relative role in staying near their mothers when off them tended to be the most disturbed (Hinde and Spencer-Booth, 1971). Second, if the separation involved removal of the mother from the group in which both had previously been living (Mother Removed or M/R procedure), the infants passed rapidly through a phase of "protest" and became "depressed" (cf. Bowlby 1960; Robertson, 1953; Spitz, 1950): they showed low locomotor activity and often sat in a hunched depressed posture. If, however, the infants were removed to a strange cage, the mothers remaining in the home pen (Infant Removed or I/R procedure), "protest" persisted for much longer. Third, mothers who had remained in the home pen while their infants were away (I/R) were much more receptive

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of their infants on reunion than were mothers who had themselves been away (M/R) and had to re-establish their own relationship with other animals in the group as well as to cope with their infants. Fourth, these last two factors interacted so that in the weeks following reunion, the effects on M/R infants were much more severe than those on I/R infants: in the former case the infants, being "depressed", were less effective in seeking maternal solicitude, and the mothers, distracted with their own affairs, were less willing to give it (Hinde and Davies, 1972a). If the immediate sequelae of a separation experience depend so much on its nature, it seems likely that the long-term effects will also. Data on that issue are presented in this paper.

SUBJECTS AND METHODS

Subjects

The data concern rhesus monkeys living in a colony consisting of six social units, each such unit containing a male, two to four adult females and their young. Each unit occupied an outside pen communicating with an inside room, as described in Hinde and Rowell (1962).

Experimental groups

Five groups were involved.

Controls. Both mother and infant lived continuously in the colony except for testing. For the watches in the colony at 1 year, data from two control groups are available, one born before and the other after the experimental groups ($N = 6$–8 and 12, respectively).

Mother-removed group (M/R). The mothers were removed to a distant cage for 13 days when the infants were about 30 weeks old (Hinde and Davies, 1972b) ($N = 5$).

Infant-removed group (I/R). The infants were removed to a distant cage for 13 days when about 30 weeks old (Hinde and Davies, 1972a) ($N = 5$).

Mother and infant removed and separated group (M–I/R). Mothers and infants were removed and placed in separate cages, distant from the colony and from each other, for 13 days when the infants were about 30 weeks old (McGinnis, 1975; Hinde and McGinnis, 1977) ($N = 6$).

Mother and infant removed but not separated group [(MI)/R]. Mothers and infants were removed to a distant cage together for 13 days when the infants were about 30 weeks old (McGinnis, 1975; Hinde and McGinnis, 1977) ($N = 5$).

Observations in the colony

Mother–infant dyads were observed for three 2-hr watches in the colony when the infants were 1 year and $2\frac{1}{2}$ years old. The following measures are discussed here.

(i) Total time off mother. The number of $\frac{1}{2}$-min in which the infant was recorded not in ventral contact with its mother, as a percentage of the number for which it was watched.

(ii) Frequency of rejections. The number of occasions on which the infant attempted to gain the nipple and was rejected by its mother, as a percentage of the number of $\frac{1}{2}$-min watched.

(iii) Relative frequency of rejections. The ratio of the number of occasions on which the infant was rejected by its mother to the sum of the number of occasions on which it was accepted by her, picked up on her initiative and rejected by her, expressed as a percentage.

(iv) Half minutes in which more than 60 cm from mother and $\frac{1}{2}$-min wholly more than 60 cm from mother. The number of $\frac{1}{2}$-min in which the infant was recorded more than 60 cm from its mother, and the number it spent wholly more than 60 cm from her, in each case as a percentage of the number it was off her at all.

(v) Infant's role in the maintenance of proximity. The percentage of occasions on which the distance between mother and infant was reduced from more than 60 cm to less due to movement by the infant, minus the percentage on which it was increased similarly.

(vi) Overall activity. The outside pen was considered as divided into eight rectangles in the horizontal plane and upper and lower components, giving 16 boxes. Activity was assessed as the mean number of boxes occupied per $\frac{1}{2}$ min that the infant spent off its mother and off all other animals.

(vii) Sitting. The number of $\frac{1}{2}$-min in which the infant was just sitting, not engaged in any obvious activity, as a percentage of the number it was off its mother and all other animals.

Observations in a test cage

The infants were also observed in one of a set of four indoor test cages with (at 1 year) or without (at $2\frac{1}{2}$ years) their mothers. Each cage was divided into two sections by a wire partition with an aperture large enough for the baby but not for the mother ("baby filter").

These test cages were the same as those in which the infants of the I/R and M–I/R group, mothers of the M/R group and mother–infant dyads of the (MI)/R group were confined during separation and/or removal from the colony: mothers of the M–I/R group were placed in different cages elsewhere during separation. Eight dyads, spread over all the experimental groups, had spent 10–20 days in this type of cage for health reasons: however, on such occasions mother and infant remained together, and they remained in visual contact with animals in other cages.

In addition to observations, certain tests were carried out in the test cages. The procedures used are described briefly where relevant below. Further details are given by Spencer-Booth and Hinde (1969, 1971).

Statistical treatment

Overall differences between groups were assessed with the Kruskall–Wallis one-way analysis of variance. Differences between groups were assessed with the Mann–Whitney U-test (two-tailed) (Siegel, 1956). Discussion is limited to measures showing significant differences between groups or with trends that are of interest in relation to those shown by other measures.

RESULTS AT ONE YEAR

Colony observations (*Table* 1)

On all measures the medians of the first and second control groups were close, and on no measure did they differ significantly. Data from the two groups have therefore been pooled.

There were no significant differences between groups in total time off the mother. However, there were in the relative frequency of rejections, the I/R and M/R groups being rejected the least. (The difference between the M/R group and the controls was significant only at $P < 0{\cdot}1$). A similar trend was apparent with the absolute frequency of rejections, though here the overall Kruskall–Wallis, significant at $P < 0{\cdot}01$ with the control 1 data, failed to reach significance when the control 2 data were included. The low level of rejections of I/R infants is in keeping with the data obtained during the reunion period, but the low level found here for M/R infants indicates a reversal of the situation immediately after reunion.

The groups differed significantly in both the proportion of $\frac{1}{2}$ min off in which the infants went more than 60 cm from their mothers, and in the proportion that they spent wholly more than 60 cm from her. Here the difference was due solely to the small proportion of time off mother that the M/R infants spent at a distance. This was associated with a high index for the infant's role in the maintenance of proximity, though the groups did not differ significantly overall on this measure.

The groups did not differ in activity, or in distress calling, but the M/R group sat immobile more than the controls and two of the experimental groups.

It will be noted that the dyads removed from the colony but not separated from each other did not differ from the controls on any of these measures of mother–infant interaction in the colony. Most of the differences shown by the other groups represent continuations of differences seen in the period immediately after reunion

TABLE 1. COLONY DATA AT 1 year

Measure	Group					Overall Kruskall–Wallis $P<$
	Controls	M/R	I/R	M–I/R	(MI)/R	
Total time off mother	71 (72, 71)	67	76	79	66	n.s.
Frequency of rejections	1·6 (3·4, 1·5)	0·8	0·7	1·5	1·1	n.s.*
				0·034		
			0·048			
Relative frequency of rejections	57 (63, 54)	21	15	47	37	0·05
	0·02		0·021			
			0·030			
Half-min in which more than 60 cm from mother	85 (84, 85)	69	86	84	84	0·05
	0·01		0·024			
			0·009			
			0·018			
Half-min spent wholly more than 60 cm from mother	54 (65, 50)	28	58	47	62	0·02
	0·002		0·008			
			0·003			
			0·004			
Infants' role in maintenance of proximity	14 (9, 16)	40	19	32	30	n.s.
	0·05					
Activity	3·5	2·5	3·0	2·4	2·2	n.s.
Sitting	2	40	32	3	8	0·05
	0·036		0·006			
			0·052			
			0·004			

* Overall Kruskall–Wallis sig. at $P < 0·01$ for 1st controls only.

Figures show median values and significance of differences (Mann–Whitney U, two-tailed, or Kruskall–Wallis). Figures for controls are for both control groups combined where available, medians for the separate groups being shown in brackets: where only one figure is given, it refers to the first control group. Significance levels for inter-group differences given as exact probabilities in Mann–Whitney U-tests.

(Hinde and McGinnis, 1977). The M/R infants had then spent less time at a distance from their mothers than the other experimental groups, and had played a (non-significantly) greater role in the maintenance of proximity to them. The tendency towards a low level of rejections in the I/R group were found also in the post-reunion period. The rather low level of rejections shown by the M/R dyads at first sight represents a change: in the weeks following reunion infants in this group had been rejected more than those in any other. However, this difference had been beginning to disappear 3–4 weeks after reunion, when the relative frequency of rejections had dropped below that of the M–I/R group to a level only just above that of the I/R group. The high level of rejections shown by the M/R dyads after reunion was ascribed to the mothers' preoccupation with re-establishing their relationships with her group companions: presumably once this was achieved they were able to show more solicitude to their infants.

Colony tests

A control group, and the M/R and I/R groups, were tested in the colony for their readiness to enter a large filter cage containing, on separate occasions, a mirror with grass in front of it, and a mirror with a banana in front of it. No significant differences emerged.

Test cage observations, Days 1 *and* 5 (*Table* 2)

In considering behaviour in the test cages, it must be remembered that the experimental groups differed not only in whether the dyads had or had not had a separation experience, but also in whether one of their members had previously been in one of the test cages without the other. Mothers of the M/R dyads, and infants of the I/R and M–I/R dyads, had been in the cages previously for a period during which they were more or less isolated from other monkeys. In addition, both members of the (MI)/R dyads, and (for health reasons) eight dyads spread over all experimental groups, had been in the cages, but whilst they were together.

On the first day, no overall differences between groups were significant. However, there were inter-group differences in the nature of the changes from the colony observations. In the control group, all individual infants spent less time off their mother. This was associated with a reduction in absolute and relative frequency of rejections in all but one individual, implying that the reduction in time off mother was due primarily to more positive responsiveness by the mothers to the infants. Similarly, both the proportion of time off mother spent at a distance from the mother, and the infant's role in the maintenance of proximity, decreased in all individuals.

By contrast, in the M/R group all infants showed an increase in time off mother. The small increase in the median value from 67 (Table 1) to 68 (Table 2) is somewhat misleading: the mean increased from 61 to 71 per cent. Whilst all dyads in this group showed a decrease in the relative frequency of rejections, the changes in the absolute frequency were variable. Similarly, the group showed an increase in the median time the infant spent at a distance from its mother, and a consistent decrease in the infant's role in proximity.

Table 2. Mother–infant watches in cage on the first and fifth day after the day of removal (see Table 1)

<table>
<tr><th rowspan="2">Measure</th><th colspan="5">Group</th><th rowspan="2">Overall Kruskall–Wallis $P <$</th></tr>
<tr><th>Controls</th><th>M/R</th><th>I/R</th><th>M–I/R</th><th>(MI)/R</th></tr>
<tr><td>DAY 1</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total time off mother</td><td>28</td><td>68</td><td>60</td><td>54</td><td>44</td><td>n.s.</td></tr>
<tr><td></td><td colspan="2">0·03</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Frequency of rejections</td><td>0·9</td><td>1·3</td><td>0</td><td>1·3</td><td>2·5</td><td>n.s.</td></tr>
<tr><td>Relative frequency of rejections</td><td>6</td><td>8</td><td>0</td><td>19</td><td>33</td><td>n.s.</td></tr>
<tr><td>Half-min in which more than 60 cm from mother</td><td>40</td><td>76</td><td>60</td><td>74</td><td>67</td><td>n.s.</td></tr>
<tr><td></td><td colspan="2">0·02</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="4">0·03</td><td></td><td></td></tr>
<tr><td>Infants' role in maintenance of proximity</td><td>0</td><td>11</td><td>4</td><td>13</td><td>25</td><td>n.s.</td></tr>
<tr><td></td><td colspan="2">0·03</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="4">0·01</td><td></td><td></td></tr>
<tr><td></td><td colspan="5">0·03</td><td></td></tr>
<tr><td>DAY 5</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Time off mother</td><td>62</td><td>82</td><td>76</td><td>63</td><td>61</td><td>0·05</td></tr>
<tr><td></td><td colspan="2">0·06</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="2">0·008</td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="3">0·013</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="3">0·06</td><td></td></tr>
<tr><td>Frequency of rejections</td><td>0·6</td><td>1·3</td><td>0·8</td><td>2·3</td><td>3·3</td><td>n.s.</td></tr>
<tr><td>Relative frequency of rejections</td><td>22</td><td>15</td><td>10</td><td>30</td><td>29</td><td>n.s.</td></tr>
<tr><td>Half-min in which more than 60 cm from mother</td><td>58</td><td>72</td><td>76</td><td>74</td><td>75</td><td>n.s.</td></tr>
<tr><td>Infants' role in maintenance of proximity</td><td>10</td><td>13</td><td>22</td><td>29</td><td>22</td><td>0·02</td></tr>
<tr><td></td><td colspan="4">0·012</td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="3">0·052</td><td></td><td></td></tr>
<tr><td></td><td colspan="5">0·052</td><td></td></tr>
</table>

The other experimental groups also tended to show reductions in time off mother and in time at a distance from mother, the latter being consistent in all individuals except for one in the M–I/R group: the reduction in time off mother was more marked in the non-separated (MI)/R group than in the other experimental groups. These were accompanied by reductions in the median absolute frequency of rejections and in the infant's role in proximity in all groups, though these changes were not consistent in all group members.

On Day 5 the tendency for the M/R infants to be off their mothers more than other groups was even more apparent, though the difference from the controls in time at a distance was not significant. The M/R infants no longer tended to play a greater role in the maintenance of proximity than the control group, and indeed tended to play a smaller role than infants of the other experimental groups.

Cage tests (*Table* 3)

Since the tests focus on the behaviour of the infants, in considering the results it must be remembered that the infants of the control and M/R groups had not

TABLE 3. TESTS IN CAGES ON DAYS 1, 6, AND 7 AFTER REMOVAL

<table>
<tr><th colspan="2" rowspan="2">Measure</th><th colspan="5">Group</th><th rowspan="2">Overall Kruskall–Wallis <i>P</i> <</th></tr>
<tr><th>Control</th><th>M/R</th><th>I/R</th><th>M–I/R</th><th>(MI)/R</th></tr>
<tr><td>DAY 1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Banana</td><td>Latency</td><td>1·58</td><td>1·10</td><td>∞</td><td>∞</td><td>∞</td><td>n.s.</td></tr>
<tr><td>No. of visits</td><td></td><td>2</td><td>5</td><td>0</td><td>3</td><td>4</td><td>n.s.</td></tr>
<tr><td></td><td></td><td colspan="2">0·01</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Med. visit length</td><td></td><td>0·76</td><td>0·18</td><td>0</td><td>0·10</td><td>0·12</td><td>n.s.</td></tr>
<tr><td>DAY 6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Mirror</td><td>Latency</td><td>0·19</td><td>0·20</td><td>2·42</td><td>0·77</td><td>2·50</td><td>0·05</td></tr>
<tr><td></td><td></td><td></td><td colspan="4">0·002</td><td></td></tr>
<tr><td></td><td></td><td colspan="5">0·03</td><td></td></tr>
<tr><td>No. of visits</td><td></td><td>17</td><td>21</td><td>19</td><td>20</td><td>12</td><td>n.s.</td></tr>
<tr><td>Med. visit length</td><td></td><td>0·39</td><td>0·30</td><td>0·33</td><td>0·48</td><td>0·42</td><td>n.s.</td></tr>
<tr><td>Banana</td><td>Latency</td><td>0·17</td><td>0·10</td><td>0·18</td><td>0·01</td><td>0·07</td><td>0·05</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">0·026</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="3">0·026</td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="4">0·026</td><td></td><td></td></tr>
<tr><td>No. of visits</td><td></td><td>5</td><td>8</td><td>6</td><td>5</td><td>3</td><td>n.s.</td></tr>
<tr><td>Med. visit length</td><td></td><td>0·67</td><td>0·43</td><td>0·48</td><td>0·97</td><td>0·43</td><td>n.s.</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">0·03</td><td></td><td></td></tr>
<tr><td>DAY 7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Yellow ball</td><td>Latency</td><td>0·15</td><td>0·05</td><td>0·19</td><td>0·01</td><td>0·27</td><td>n.s.</td></tr>
<tr><td>No. of visits</td><td></td><td>9</td><td>10</td><td>13</td><td>7</td><td>2</td><td>0·05</td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="3">0·02</td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="4">0·05</td><td></td></tr>
<tr><td></td><td></td><td colspan="5">0·004</td><td></td></tr>
<tr><td>Med. visit length</td><td></td><td>55</td><td>20</td><td>29</td><td>28</td><td>9</td><td>n.s.</td></tr>
</table>

Measures are latencies to enter the filter cage in which the object was placed in minutes, median no. of visits there, and median visit length (see Table 1).

previously been alone in the cages, whilst the infants of the other groups had previously been confined there either alone or [(MI)/R and some other dyads] with their mothers.

All the infants in the control and M/R groups, which had not been alone in the cages previously, entered the filter cage in the banana test on the first day. By contrast, at least half of the infants in each of the other groups failed to enter ($P < 0{\cdot}01$, Fisher, exact test). Although the overall differences were not significant infants in these first two groups also tended to visit more often and for longer.

When, on Day 6, the filter cage contained a somewhat frightening object (a mirror), infants that had not been in the cages previously again tended to enter the filter cages with shorter latencies than the infants in the other groups. With the more attractive (or less frightening) stimuli of the banana and yellow ball, however, these differences disappeared: the principal differences then involved an unexpectedly large readiness of the M–I/R infants with the banana and a low readiness of the (MI)/R infants with the ball.

RESULTS AT 2½ YEARS

A few additional data were collected when the monkeys were 2½ years old (Table 4). Although rather sparse, they strongly suggest that the differences present in infant behaviour in the home environment at one year persisted.

TABLE 4. TWO-AND-A-HALF YEARS ACTIVITY WATCHES IN COLONY AND IN TEST CAGE (DAY OF REMOVAL AND 5/6 DAYS AFTER REMOVAL) (see Table 1)

Measure	Group					Overall Kruskall–Wallis $P <$
	Control	M/R	I/R	M–I/R	(MI)/R	
$n =$	8	5	5	6	5	
Activity (Colony)	3·10	2·71	1·90	1·87	2·12	0·1
		0·018				
		0·008				
Sitting (Colony)	23	44	5	—	—	0·001
	0·003		0·001			
		0·001				
Activity (Cage, Day 0)	1·71	2·19	1·96	2·64	1·76	0·1
	0·033					
		0·033		0·041		
		0·023				
Sitting (Cage, Day 0)	95	87	86	—	—	n.s.
Activity (Cage, Day 5/6)	3·05	4·63	6·16	7·90	3·69	n.s.
Sitting (Cage, Day 5/6)	56	48	47	—	—	n.s.

Activity in the colony

Although the overall differences just failed to reach significance ($P < 0{\cdot}01$) the experimental groups tended to be less active than the controls, as at 1 year: the differences were greatest in the two groups in which the infant had been removed from the colony and separated from his mother. Owing to a slight change in procedure, data on sitting were available for only three groups: as at 1 year, the M/R group scored higher than the controls, though the I/R group now scored less.

Activity in the test cage

On the day of removal to the test cage the situation was reversed, the control and the non-separated experimental groups tending to show lower levels of activity than the separated groups. On Days 5/6 differences were in the same direction but not significant.

Tests

Three types of tests were carried out in the test cage on the control and M/R groups. (i) On four occasions the animals were presented with a banana in a clear plastic box tied round with string. (ii) On two occasions a date was hung outside the cage and just out of reach. (iii) On two occasions an experimenter stood in the front of the cage wearing a grotesque mask. Details of these tests are given in the preceding papers. No clear differences emerged between these two groups.

DISCUSSION

First, two reservations about these data must be mentioned. In a previous paper groups of infants whose mothers had been removed for one and two 6-day periods were compared with controls (Spencer-Booth and Hinde, 1971). The first control group in the present study was the same as that used in the previous study. While this does not affect conclusions about differences between the several experimental groups discussed here, conclusions about differences between 13-day separated groups and controls are not wholly independent from those in the previous paper for 6-day and two 6-day separated animals. However, evidence for the representative nature of the data from that control group is provided by the second control group in this study: on none of the measures of mother–infant interaction in the colony did the second control group differ significantly from the first.

The second reservation concerns the heterogeneous nature of the animals in the groups. A number of potentially important independent variables could not be controlled (e.g. source of mother, sex of infants, further pregnancy of mother at one year, see e.g. Hinde and White, 1974): however, breakdowns of the data by these criteria gave no indication that they were responsible for the between-group differences shown here.

Data on mother–infant interactions and on infant activity in the colony in general parallel those obtained in the weeks after reunion: the differences between the experimental groups and the controls at one year were similar in kind to the differences between data from the experimental groups a month after reunion from separation and data from the same groups before separation. As discussed earlier, the low level of rejections in the M/R group constitutes a contrast to the high level in the week or so after reunion, but probably represents extension of a trend that was becoming apparent a month after reunion. In time spent at a distance from the mother, in the infant's role in the maintenance of proximity, and in the frequency of sitting unoccupied, the M/R group differed not only from the controls but also from the other experimental groups just as they had done after reunion. Differences between this 13-day M/R group and controls in the colony were also similar to, but more marked than, those obtained with the earlier 6-day group. It is of special significance that the M/R group, most affected in the post-reunion period, also stood out on a number of measures 5 months later. Furthermore, the M/R infants' high frequency of sitting unoccupied, as compared with the controls, was still present when they were 2½ years old.

The absence of differences between the experimental groups and controls in the colony tests was found also in the previous study.

The test cage data are inevitably complex because transportation from colony to cage can have diverse effects on the mother–infant relationship and on infant behaviour according to which, if either, of the dyad had had markedly traumatic experiences there previously. It is, however, possible to understand the data on the assumptions that:

(1) Infants that had not previously had separation experiences in the cages were more ready to go to a distance from their mothers when off them.

(2) Mothers and infants responded to the (relatively) strange situations of the test cage by behaving more positively to each other, though mothers who had previously had a separation experience there tended to reject their infants more than those who had not, while infants who had had such an experience tended to be more dependent. In discussing how assumptions such as these could explain the pattern of data obtained, we shall neglect for the moment the fact that many of the inter-group differences did not reach the 0·05 level of significance.

That infants that had not previously been isolated in the cages were ready to go to a distance from their mothers when off them is shown by the short latencies of infants in the control and M/R groups to enter the filter cages both on the first day and in the presence of the mirror on the sixth day.

The second set of assumptions are compatible with the data as follows. On the first day in the cage the control infants were off their mothers less and were rejected by them less than in the colony. On this day the M/R infants were rejected less in relative terms, but more in absolute, than they had been in the colony. As a consequence, whereas in the colony the M/R infants had been rejected less than the controls, in the cages they were at first rejected more. The initial difference in time off mother in the cages between controls and M/R infants was therefore primarily due to the more rejecting nature of the M/R mothers. That the M/R infants at first spent more time off their mothers in the cage than they had in the colony, when the changes in the rejections were equivocal, was presumably due to a greater relative independence of the infants, perhaps a consequence both of their readiness to go to a distance (see above) and maternal rejections.

In contrast to the M/R infants, but in keeping with the above hypothesi majority of the I/R infants were not rejected at all on the first day in the test cage, and they went to a distance from their mothers less than the other groups.

Certain aspects of the M–I/R data are also compatible with these hypotheses. The pattern of differences suggests that the infants were off less than those of the M/R and I/R groups because the infants were more demanding in the face of a similar or greater frequency of rejections. Finally, with the (MI)/R group, where both members had previously been in the cage together, and thus had had less adverse experience there than mothers of infants who had been there alone, the relative frequency of rejections was more similar to that in the colony than was the case with any other group.

Many features of this pattern remained on the fifth day: it may also be noted that infants that had previously been in the cages whilst separated (I/R and M–I/R) played a greater role in the maintenance of proximity than did the M/R infants.

We wish to emphasize that we do not wish to push the particulars of this account: it is merely a *post hoc* account which seems plausibly to explain many aspects of a pattern of differences, many of which in any case fail to reach significance. But we would claim:

(1) That these data provide some further support for the view that a relatively brief (13 day) separation experience can have fairly long-lasting (*ca.* 5 months, perhaps 2 years) effects on the mother–infant relationship of rhesus monkeys. It is important to emphasize that not all separation procedures produce such effects: the mother–infant relationship has regulating powers that enable it to surmount trauma provided the relationship is initially adequate and the trauma not too severe (Dunn, 1976; Hinde, 1977).

(2) That behaviour in the test cages can most economically be understood in terms of responsiveness by mother and infant to the cage situation, such responsiveness being affected by the past experience of each individual and affecting their relationship with each other. This is of interest in that the consequences of a separation experience in man have been ascribed to adverse conditioning during the separation period (Gewirtz, 1961). It does not necessarily mean that the change in the mother–infant relationship in the colony is most economically ascribed solely to adverse conditioning, though the continuation of separation-induced depression after reunion in the M/R infants may be (see Introduction).

(3) That the consequences of a separation experience are complex. This is a truism, but perhaps worth saying. Whilst not holding to the particulars of our explanation of behaviour in the test cages, we do believe that any explanation would have to take account of not only the mother–infant relationships on entering the test situation, but also the effects of the strangeness of, and/or previous conditioning to, the cage environment on each member of the dyad, the consequences of these on their immediate interactions, the consequences of these on their longer term relationship, and the consequences of this on their response to strange objects.

SUMMARY

Thirty-week old infant rhesus monkeys, living with their mothers in small groups, were subjected to four types of treatment. Either the mothers were removed for 13 days, the infants remaining in the colony (M/R), or the infants were removed (I/R), or both mother and infant were removed and separated from each other (M–I/R), or both were removed for 13 days but kept together [(MI)/R]. Control monkeys were left in the home groups. At 1 year data were collected in the home pens, and after mother and infant had been removed to test cages. The data support the view that a period of separation between mother and infant can, but need not, have long-term sequelae. The M/R infants, most affected in the weeks following reunion, were also the most affected at 1 year. Group differences in behaviour in the test cages suggested that adverse conditioning to the separation environment played an important role, though this did not operate in precisely the same way on mothers and infants. It is emphasized that the consequences of a separation experience are complex.

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A METHOD FOR THE LONGITUDINAL STUDY OF BEHAVIORAL DEVELOPMENT IN INFANTS AND CHILDREN: THE EARLY DEVELOPMENT OF XXY CHILDREN

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INTRODUCTION

Modern-day behavior genetics offers a conceptual framework that supplants the outmoded nature–nurture dichotomy and insists upon an indissoluble genetic–environmental interactionism underlying behavioral development. The relevance of bioenvironmental interactionism is more easily demonstrated in animals than in humans, since in subhuman species we can employ the experimental manipulations and systematic rearing methods that are not applicable for human research. One productive strategy that is available for human behavior genetic research, however, is the analysis of behavior in individuals with naturally occurring biologic variations in search of commonalities in behavioral development among individuals with the same clinical syndrome.

Although the early behavioral observations in the field of human cytogenetics often suffered from ascertainment bias, they did suggest that the systematic study of individuals with errors in sex chromosome number (XO, XXY, XYY) might yield information about the role of sex chromosomes in behavioral development (Alexander *et al.*, 1964; Jacobs *et al.*, 1965; Money, 1963; Pasqualini *et al.*, 1957; Shaffer, 1962). Most efforts to determine the relation between sex chromosome variations and behavior have been based on chromosome screenings of populations preselected for particular personality variations (i.e. populations in mental–penal settings, in hospitals for the retarded, or in psychiatric clinics or hospitals), with a higher incidence of a particular sex chromosome abnormality being found than that reported among non-biased "background" populations (i.e. among consecutively born infants) (Annell *et al.*, 1970; Crandall *et al.*, 1972; Ferrier *et al.*, 1969; Hook, 1973; Hunter and Hoggart, 1967; Jacobs *et al.*, 1965; Jacobs *et al.*, 1974; Kivowitz and Corcoran, 1971; Walzer and Gerald, 1977). While such observations suggest that a population with a specific chromosome complement might be at increased risk for appearing in a specific social setting oriented to a particular personality

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deviation, they give no information about the developmental significance for affected individuals who do not manifest the preselected behavioral variation. Unbiased information on the relation between specific sex chromosome aberrations and behavioral variations can best be obtained from systematic studies of aneuploid individuals who have not been preselected for any particular behavioral impairment or variation.

This report summarizes preliminary results from a longitudinal behavioral study of male infants who were ascertained to have an XXY sex chromosome complement at birth and who are being followed longitudinally through early ontogenesis.

METHODS

Infants with chromosome variations were located through a chromosome survey of newborn males (Walzer *et al.*, 1969; Walzer and Gerald, 1977). If the neonate with a chromosome abnormality was phenotypically normal at birth (as was usually the case), we waited until he was 4 months old before informing the parents. This gave them time to become better acquainted with their infant and they were then better able to accept reassurances about the probable limited relevance of the chromosome variation for their child's future development.

We considered it essential that in all cases the parents be informed about the chromosome abnormality and its known developmental implications. Prospective parents were therefore informed prior to the screening procedure that they would be notified if their infant was found to have a chromosome abnormality.

Parents of infants with the XXY karyotype were told that the phenotypic consequences of this chromosome variation would probably be testicular changes and delayed puberty. Using terms easily understood by the parents, we further explained our limited knowledge about the behavioral implications of these karyotypic variations. We emphasized that long-term prospective studies of children with these variations would help to determine whether affected individuals carried any risk for developmental impairment.

The need to share this information with the parents determined the nature of the control sample, which comprised neonates having a chromosome abnormality that did not affect the phenotype adversely. The chromosome variations included were those in which two autosomes (chromosomes other than the X or Y) suffered a break, each losing a fragment of greater or lesser size, which was then interchanged and rejoined in a new arrangement. Since there was—at the most—only a minimal loss of genetic material, the infant with the anomaly was phenotypically normal. These abnormalities are most frequently carried by one of the parents and are called familial balanced translocations (autosomal rearrangements).

We included these infants since their parents also had to be informed about the existence of a variation. It was possible to give these parents considerable reassurance about the insignificance of the chromosome variation for the child's development, by pointing out that one of them (either the mother or the father) carried the same variation and that it had not affected the parent's development adversely. Thus, the information given the families about the chromosome variation and its possible developmental significance was different for the aneuploid and the control groups. However, this was the most adequate control possible for the variable of parental informing.

Developmental information about XXY and control subjects was obtained from the parents in semistructured interviews that were recorded verbatim during home visits. Direct observations of the children were conducted on a different day in the homes according to a systematic protocol.

The ethical obligation to inform parents about the chromosome variation precluded a truly "blind" study. The parents' knowledge made it impossible for an investigator to remain "blind" when conducting the interviews since an accidental verbal slip by a parent during any interview throughout the time the child was followed would have "broken the code". Therefore, the most conservative approach dictated that the interviewer should also know the chromosome identities. Interviewer bias was minimized by structuring the interviews around the items of behavior previously selected for study and by employing some uniformity in the wording of the direct questions.

The individual who made the behavioral observations in the home, however, was unaware of the chromosome diagnosis and the parents were asked not to discuss the child in any detail with this observer. Thus, the direct observations served as a check on the interviewer's biases and on distortions that might be introduced by parental reporting about the child.

A third check on possible bias was introduced by focusing the interview on specific, operationally defined variables whose distribution among XXY and control groups was unkown at the time the coding system was devised.

Parental interviews

Parents were interviewed (and infants observed) twice during the 7-month period after the parents had been informed (i.e. when the infants were about 5 months and 10 months of age); during the second and third years of life these procedures were repeated at 6-month intervals. The historial account of the child's development as given by the parent (usually the mother) was recorded verbatim by the interviewer. In the first part of each interview the parent was encouraged to talk freely about the child's behavior and development; in the second part of the interview, additional information was obtained from the parent in each developmental area according to a structured interview schedule. Since the data sought were the descriptive facts about the behavioral items selected for study, we requested specific concrete descriptions of behavior whenever the parent gave subjective interpretations of the child's behavior. For example, if a parent stated that the child "did not like that food", the interviewer would ask for concrete examples of behavior that determined the parent's subjective assessment. Thus, the parent might report: "I know he did not like that food because he spit it out, turned his head, pushed my hand away and cried loudly when I tried to feed more of it".

Parental interviews were recorded verbatim on a court stenograph machine to avoid the difficulties encountered with direct sound recordings in the home setting, where the mother moves about freely while caring for her children. The principal investigator was trained to record at a rate of over 130 words per minute, which was more than adequate for the give-and-take type of communication in a home interview.

Behavioral and developmental categories

The child's specific behavior in a wide range of everyday activities (i.e. eating, sleeping, bathing, dressing, free play, trips to the store, etc.) was scored in terms of 12 operationally defined behavioral categories and four categories that referred to specific developmental domains. Nine of the behavioral categories had previously been defined by Thomas *et al.* (1963) for their predictive study and seven categories were added to cover certain behaviors and specific developmental areas more completely. The 16 categories included the following:

1. *Activity level.* This category described the extent to which motoric behavior characterized the child's functioning. Responses were scored as high, moderate or low.

2. *Pliancy.* This category reflected the disposition of the child either to yield to and depend upon another individual, or to function independently or impose his will on another. Responses were scored as pliant, variable or non-pliant.

3. *Intensity of responsiveness.* Parental statements referring to specific concrete behaviors were scored in one of three measures of "energy content": intense (robust, ebullient); moderate or mild (lethargic, weak).

4. *Approach–withdrawal.* This category referred to the child's responses to novel events, i.e. new foods, new toys, strangers, new places and situations. Taking introductory steps in order to become more fully acquainted with the novel experience was scored as approach. Holding back or turning away from involvement with the new experience was scored as withdrawal.

5. *Capacity to relate.* Relatedness referred to the nature or quality of the child's relationship with people. Responses were scored as positive, variable or negative.

6. *Mood.* In this category were recorded all direct references to those behaviors that revealed the child's emotional state. Responses were scored as positive, variable or negative.

7. *Adaptability.* This category was concerned with the sequential course that was followed as the child adapted to altered situations. In contrast to the Approach–Withdrawal category, it was not

concerned with the initial response, but with the relative ease or difficulty with which the child adapted to the change over time. Responses were scored as adaptable, variable or non-adaptable.

8. *Distractibility*. The degree to which extraneous environmental stimuli could alter the direction of ongoing behavior was scored in this category. Two stimuli were included: (1) the conscious attempt of another person to alter the child's behavior by offering an alternative object or activity (e.g. a mother giving a toy when the child is crying for food), (2) the effect of external background sensory stimuli on the child's ongoing behavior. Responses were scored as distractible, variable or non-distractible.

9. *Attention span–Persistence*. Attention span referred to the length of time the child pursued a particular activity. Persistence referred to the continuation of a specific activity in the face of some obstacle that resisted or attempted to interfere with the maintenance of the activity's direction (an external obstacle in the environment or a parental "no"). Responses were scored as long, variable or short.

10. *Regularity–Periodicity*. These two categories were based on the degree of regularity or rhythmicity of the repetitive functions. Information concerning rest and activity, sleep–wake cycles, eating habits and bowel and bladder functions was scored as regular, variable or irregular.

11. *Threshold of responsiveness*. This category referred to the intensity of a sensory stimulus (i.e. auditory, visual, tactile and kinesthetic stimuli along with taste, temperature and pain) that was required before a discernible response was noted. Responses were scored as high, moderate or low threshold.

12. *Management of aggression*. Direct expression of aggression was scored when a behavior resulted in or threatened to result in harm or pain to another person or threatened the intactness of objects. Behaviors such as striking, pinching, biting, kicking, fighting and breaking objects were scored as direct expressions of aggression. Threatening verbal behavior and temper outbursts were also scored here. Indirect expressions of aggression included hostile fantasy or play, "play fighting", passive–aggressive maneuvers (such as sullenness, procrastination, stubbornness and obstructionism) and teasing behavior. Responses to both direct and indirect expressions of aggression were scored as evident, variable or absent.

13–16. *Motor development, physical development, speech and language development, cognitive development.* The parent's direct references to the adequacy or inadequacy of development in these areas were recorded in the appropriate categories.

Coding procedure

A dictionary of definitions was prepared which aided coders in assigning specific behaviors to the appropriate categories. The typed parental interview text was arbitrarily subdivided into consecutively numbered samples whose size was limited by the changing content of the narrative. Each sample was scored in the categories appropriate to its content, with the appropriate condition (i.e. high, moderate or low; positive, variable or negative) being selected and scored.

Any specific unit of described behavior could be classified as belonging to one or more behavioral categories. After recording the number of words in the specific sample, the coder selected the appropriate condition for each relevant category. A sample from a parental interview text is presented to demonstrate the methodology (Table 1).

TABLE 1. CATEGORIES SELECTED AS BEING RELEVANT TO BEHAVIORAL SAMPLE

"John and his friend have a ball together. They run around the house—yelling, laughing—oh, they are loud. They're up and down the stairs—jumping on the bed. Your can hear them a mile away."

Sample size—36 words

Categories selected as being relevant	Condition (measure) of the category
Activity level	High
Capacity to relate	Positive
Mood	Positive
Intensity of responsiveness	High

Direct observations

Within 2 weeks of the parental interview an observer unaware of the child's karyotypic identity made a home visit. This individual recorded a running account of the child's activities both in a free-field setting and during one feeding. A 2-hr observation was systematically recorded in half-minute intervals and included such items as position and locomotion, activity level, activity choice, energy level of responsiveness, social interaction, initial response to the presence of the observer and mood.

Each 30-sec sample of the observer's protocol was scored for the categories appropriate to its content. The categories that applied to the observational data included Activity Level, Pliancy, Intensity of Responsiveness, Approach–Withdrawal, Mood and Capacity to Relate.

Data reduction

The coded data from the interviews and the direct observations were then processed by computer to yield a single number (the preponderance rating) for each behavioral and developmental category. This rating was on a scale from 0 to 200, with a score from 99 down to 0 representing an increasingly negative category value (i.e. low activity level, withdrawal, non-adaptable, etc.) and a score from 100 to 200 representing an increasingly positive value (i.e. high activity level, approach, adaptable, etc.).

The preponderance rating for each behavioral or developmental category represented the difference between:

The proportion of the total references to a category (i.e. Activity Level, Pliancy, etc.) that were in a positive direction (i.e. high, positive, etc.) and

The proportion of the total references to a category that were in a negative direction (i.e. low, negative, etc.).

The formula employed to derive the preponderance rating is given below:

VARIABLES	NUMBER OF WORDS (VERBATIM INTERVIEW) OR NUMBER OF 30-sec INTERVALS (DIRECT OBSERVATION) THAT REFERRED TO:
A	Positive category condition (high activity level, approach, adaptable, adequate speech development, etc.)
B	Intermediate or variable category condition (moderate activity level, variable adaptability, variable speech development, etc.)
C	Negative category condition (low activity level, withdrawal, non-adaptable, inadequate speech development, etc.)

FORMULA

$$\frac{A - C}{A + B + C} \times 100 + 100 = \text{PREPONDERANCE RATING.}$$

The preponderance rating defined a child's reactive style for each behavioral category. Thus, a child might be seen as highly active, irregular in his periodic functioning, withdrawn in his response to novel experiences, moderately intense in the energy content of his responsiveness, etc.

Parental reports about the behavior of each sibling were scored independently; the siblings served as intrafamilial controls for the experimental and control subjects.

Data analysis

The interview and observation preponderance ratings for the total sample of aneuploid and control children were divided into an upper, middle and lower third with respect to each category. Chi squares were computed to determine how well each category discriminated the experimental and control groups in terms of their relative distributions in the upper, middle and lower thirds of the total sample.

Formal testing procedures

The Bayley Scales of Mental Development and the Motor Scales were administered at 20 months of age by a psychologist unaware of the child's karyotypic identity. A more extensive battery of psychological tests is being used when the child is 5 years old. Formal speech-language and reading evaluations have been obtained on children demonstrating language delays or learning disabilities.

Reliability and validity evaluations

The reliability of the scoring procedure was tested by comparing the results obtained by the two primary scorers employed in the study. These two individuals independently scored one parent interview for each of five XXY, five XYY and five control children. The children were then characterized in terms of their preponderant behavioral rating (i.e. upper, middle, lower third) in each of the behavioral categories according to the results obtained by each scorer, and the ratings were compared for each child.

When the preponderant behavioral ratings that each scorer obtained for each behavioral category were compared, the ratings were identical in 95 per cent of the 351 comparisons made.

Since the parents were the primary source of the developmental data, it was essential to determine how well their descriptions of the child's behavior agreed with the direct observations by the individual unaware of the child's karyotypic identity. Such a comparison would evaluate the validity of the parents' reports as well as identify possible biases introduced by the interviewer's knowledge of the karyotypic identity.

TABLE 2. CHI SQUARE VALUES OF THE DIFFERENCES BETWEEN THE PREPONDERANCE RATING DISTRIBUTIONS OBTAINED FROM THE PARENTAL INTERVIEWS AND THE DIRECT OBSERVATIONS

A. XXY

Age (months)	4–6	7–12	13–18	19–24	25–30	31–36
Activity level	7·75*	2·25†	12·50**	8·00***	4·44**	3·94**
Pliancy	2·85	1·05†	5·24*	2·67	8·00**	12·75***
Intensity of responsiveness	2·25	3·78**	8·75*	8·00***	4·44**	2·25*
Mood	1·44	6·85	6·04	4·00	0·89	4·00
Relatedness-people	1·96	2·25	2·29	0·67	7·50*	3·38

B. Controls

Age (months)	4–6	7–12	13–18	19–24	25–30	31–36
Activity level	2·63	2·00	7·78*	2·10	5·11*	5·00*
Pliancy	6·67	8·00*	1·28	7·00**	5·00*	5·00*
Intensity of responsiveness	1·50	7·00*	4·67	7·00**	1·88	2·92
Mood	6·00	3·25	4·96*	3·50	1·88	1·33
Relatedness-people	2·10	3·12	5·69	7·00**	5·56	1·88

*$0{\cdot}1 \geq P > 0{\cdot}05$. **$0{\cdot}05 \geq P > 0{\cdot}01$. ***$P \leq 0{\cdot}01$.

†The absence of significance in the differences between the preponderance rating distributions obtained from the interviews and observations could be accounted for by the small variance within each of the behavioral categories, with most XXY children being clustered in the lowest activity level and highest pliancy groups.

Table 2A indicates that—for XXY children—there was a satisfactory correlation between the data obtained through direct observations and those obtained from parental interviews for Activity Level, Pliancy and Intensity of Responsiveness. It was to be expected that the correlations for the other two categories that were systematically scored during the direct observations (i.e. Mood and Capacity to Relate) would be less satisfactory, since the direct observational data for these particular variables were not really comparable to the data collected in the parental interviews. To collect comparable data for these two categories would have required direct observational contacts over very extended periods; this was not possible within our research design.

In making the same comparisons for the control children, we found the correlations to be less significant generally (Table 2B). In part, this was the result of the smaller number of control children on whom 3 years of developmental data were available (eight children in the first 2 years; seven in the third year). The level of correlation was also related to the particular distribution of the children among the upper, middle and lower third of the population with respect to each category (see Results below). Thus, the observation–interview comparisons for the XXY children correlated best for those categories in which the children clustered at the ends of the distribution scales (i.e. Activity Level, Pliancy and Intensity of Responsiveness). Since the control children appeared more frequently in the moderate ranges (the middle third of the population) with respect to these categories, their specific behaviors during any single visit were more variable and might be scored preponderantly as high or low depending on a variety of circumstances.

RESULTS

This report summarizes the preliminary results on thirteen subjects with XXY complements and on eight controls with balanced autosomal rearrangements. Ten of the thirteen XXY children had passed their third birthday at the time of this report and behavioral data are available for their first 3 years. The other three XXY children were under 2 years of age; developmental data of their first year of life have been included in the report.

The data on four other children with XXY complements have not been included for the following reasons: one was a mosaic XY/XXY; two were under 1 year of age at the time of this report; one joined the study at age five, having spent his early developmental years in a foreign country.

Seven control children had passed their third birthday at the time of this reporting and their behavioral data were available for the entire 3-year period. Data on one additional control child who was only 2½ years of age will be reported for the first 2 years of life.

A. *Reactive style categories*

The results obtained from the interviews and the direct observations will be compared for those behavioral categories in which both sets of data could be collected. Categories such as Rhythmicity–Periodicity and Adaptability pertain to aspects of behavioral adaptation that could only be evaluated from the interview material. The results for the reactive style categories are given in Table 3.

1. *Activity level.* In the parent interviews the differences between XXY and control children either approached or reached the conventional level of statistical significance at 7–12 months ($P = 0{\cdot}014$), 19–24 months ($P = 0{\cdot}073$), 25–30 months ($P = 0{\cdot}053$) and 31–36 months ($P = 0{\cdot}037$), with XXY children having lower activity scores than controls. At 13–18 months, when most children show significant progress with walking, the parents of XXY children viewed the change in activity level as being more marked than did the parents of controls, since many XXY children had been reported as being inactive in earlier time periods. A greater number of XXY children now appeared in the moderate range (one even in the high range) of Activity Level and group differences were not significant during this period.

In the direct observations the differences between the two groups either approached or reached the conventional level of significance at 4–6 months ($P = 0{\cdot}083$), 7–12 months ($P = 0{\cdot}007$), 13–18 months ($P = 0{\cdot}029$) and 31–36 months ($P = 0{\cdot}028$).

2. *Pliancy.* In the parent interviews group differences between XXY and controls reached the conventional level of significance at 7–12 months ($P = 0{\cdot}007$) and approached this level at 13–18 months ($P = 0{\cdot}093$), with the Pliancy scores being higher for XXY children than for controls. Many parents of XXY children reported

TABLE 3. CHI SQUARE VALUES OF THE DIFFERENCES BETWEEN THE PREPONDERANCE RATING DISTRIBUTIONS IN THE XXY AND CONTROL GROUPS FOR THE REACTIVE STYLE CATEGORIES

Age (months)	4–6	7–12	13–18	19–24	25–30	31–36
1. Activity level						
Interview	3·09	8·59**	0·49	3·23*	3·75**	4·38**
Observation	5·00*	9·98***	7·14**	4·15*	1·89	7·23**
2. Pliancy						
Interview	2·40	10·13***	2·84*	0·08	0·63	0·93
Observation	0·13	5·26*	1·27	3·28	5·76*	5·28*
3. Intensity of responsiveness						
Interview	1·80	8·59***	5·03*	8·04***	3·75**	0·93
Observation	2·40	8·27**	3·55	8·27**	1·89	7·23**
4. Approach–Withdrawal						
Interview	4·69*	5·24*	4·50*	4·15*	8·78***	6·38**
Observation	—	—	—	—	—	—
5. Capacity to relate						
Interview	0·17	0·82	1·32	2·65	0·12	4·71*
Observation	0·81	1·12	0·69	3·75	1·17	1·66
6. Mood						
Interview	0·13	0·75	0·01	0·27	4·20*	2·44
Observation	0·48	1·66	4·42*	0·80	0·04	1·66
7. Adaptability						
Interview	2·81	0·70	0·80	1·81	0·54	1·60
8. Distractibility						
Interview	0·48	8·10**	0·31	1·81	8·71***	4·20*
9. Attention span–Persistence						
Interview	6·08**	3·32	1·31	1·78	3·28	1·66
10. Regularity–Periodicity						
Interview (Regularity)	5·00*	5·24*	7·20**	7·54**	2·44	2·44
Interview (Periodicity)	7·88**	10·07***	1·19	11·79***	4·20*	3·85
11. Threshold of responsiveness						
Interview	1·93	7·89**	1·27	2·09	5·11*	2·24
12. Management of aggression						
Direct-interview	5·04*	6·86**	0·08	3·23*	3·75**	0·03
Indirect-interview	—	—	1·86	2·09	0·63	0·09

*$0{\cdot}1 \geq P > 0{\cdot}05$. **$0{\cdot}05 \geq P > 0{\cdot}01$. ***$P \leq 0{\cdot}01$.

that their offspring were easy to manage, accepted parental restrictions willingly and adjusted their own schedules and activities to the requirements imposed by the parents.

The negativism and self-assertiveness associated with increasing autonomy was reported as being evident at 13–18 months in the control group and at 19–24 months in the XXY group.

The direct observations scored for this category were based primarily on one type of behavior, i.e. the child's reaction to restrictions or limitations imposed by the mother to influence his behavior. With this limited definition, group differences either approached or reached the conventional level of significance at 7–12 months ($P = 0{\cdot}073$), 25–30 months ($P = 0{\cdot}053$) and 31–36 months ($P = 0{\cdot}072$).

3. *Intensity of responsiveness.* In the parent interviews group differences either approached or reached a conventional level of significance at 7–12 months ($P = 0{\cdot}014$), 13–18 months ($P = 0{\cdot}082$), 19–24 months ($P = 0{\cdot}005$) and 25–30 months

($P = 0{\cdot}053$). Parental descriptions of behavior for XXY children were scored frequently as being low in intensity of energy content.

The observer's ratings discriminated between the two groups at 7–12 months ($P = 0{\cdot}017$), 19–24 months ($P = 0{\cdot}017$) and 31–36 months ($P = 0{\cdot}028$), with XXY children being scored as low in energy of responsiveness.

4. *Approach–Withdrawal.* In the parent interviews XXY children were more frequently scored as withdrawing from new and novel events than were the controls throughout all time periods being considered in this report. Group differences were significant at 25–30 months ($P = 0{\cdot}013$) and 31–36 months ($P = 0{\cdot}042$) and approached the conventional level of significance at 4–6 months ($P = 0{\cdot}069$) and 7–12 months ($P = 0{\cdot}073$). The parents of XXY children reported hesitancy and caution as the more common response of their offspring to new situations, people, food and experiences.

In the direct observations, approach or withdrawal was scored on the basis of the child's initial response to the observer's arrival for each home visit. The XXY children were scored as withdrawing from the observer in 57 per cent of the visits, whereas the control children were similarly scored in only 29 per cent of the home visits.

5. *Capacity to relate.* In the parent interviews this category did not discriminate between groups at the conventional level of significance for any time period considered in this report. In the first 24 months, however, XXY children were more shy and avoided strangers, but their social relationships with the important familiar persons in their daily lives—parents, siblings, babysitters and other caretaking figures — did not differ from those reported for the control infants and children.

At 31–36 months, the parents of XXY children began to view their child's tendency to withdraw from new social situations as affecting the child's ability to relate to other children, singly or in play groups.

The observer's ratings did not discriminate between groups at any time period considered in this report.

6. *Mood.* In the parent interviews this behavioral category did not discriminate between the two groups during any time period. However, parents of XXY children frequently mentioned a low level of affect expression—a "serious" or "bored" expression—a term we classified as "muted mood". This may be one manifestation of the low intensity of behavioral responsiveness that characterized XXY children.

In the direct observations this category did not discriminate between the two groups at any time period.

The following six categories (Table 3) were scored only from the parental interview material.

7. *Adaptability.* Although XXY children were frequently reported to respond to novelty by an initial withdrawal, their adaptation to change over time was as adequate as that of the control children. Thus, the Adaptability category did not discriminate between the two groups in any time period covered by this report.

8. *Distractibility.* This category discriminated between the XXY and the control groups at 7–12 months ($P = 0{\cdot}018$) and at 25–30 months ($P = 0{\cdot}013$). At 7–12 months, the greater distractibility related primarily to the ease with which the

mothers of many XXY children could alter the child's action by offering alternative objects or activities.

At 25–30 months the higher distractibility scores for XXY children related primarily to parental reports that extraneous background stimuli appeared to divert the child's attention from ongoing activities.

9. *Attention span–Persistence.* This variable discriminated between the two groups only at 4–6 months ($P = 0{\cdot}049$). The parents of XXY infants reported that their offspring did not sustain their activity when they encountered an obstacle (i.e. lack of persistence). Throughout the remaining periods considered in this report (7–36 months) this category did not discriminate between the XXY and the control children.

Although the parents of XXY children frequently reported distractibility as a characteristic at 25–30 months, this did not alter their assessment of an adequate attention span. The children were often distracted by peripheral stimuli, but their attention soon returned to the activity they were involved in before the interruption. Furthermore, their lower activity levels probably limited their movement, and therefore limited the number of objects they were likely to encounter.

10. *Regularity and Periodicity.* The Regularity category discriminated between the two groups at 13–18 months ($P = 0{\cdot}028$) and at 19–24 months ($P = 0{\cdot}024$); similar trends were noted at 4–6 months ($P = 0{\cdot}083$) and 7–12 months ($P = 0{\cdot}073$).

The XXY children appeared to have difficulty organizing their daily routines to conform to the parental patterns of expectations. Furthermore, at times of stress these functions easily became disorganized. The parents made references to reversal of the day–night sleeping patterns for periods of time or to repeated awakenings during the night, at which time the child appeared wide-awake and "ready to go". There were occasional references to difficulties with eating schedules, with a "single ongoing meal" extending over the entire day.

11. *Threshold of responsiveness.* This category did not discriminate in any consistent way between the two groups. The XXY children were more frequently reported to be less responsive to sensory stimuli than were the controls at 7–12 months ($P = 0{\cdot}020$) and at 25–30 months ($P = 0{\cdot}078$). It is difficult to determine whether this assessment was due to a higher sensory threshold or to a lowered energy content in responses, which might therefore escape the parents' notice.

12. *Management of aggression.* The direct expression category discriminated significantly between the two groups at 7–12 months ($P = 0{\cdot}033$) and at 25–30 months ($P = 0{\cdot}053$); trends in the same direction were noted at 4–6 months ($P = 0{\cdot}081$) and 19–24 months ($P = 0{\cdot}073$). At 4–12 months the parents of XXY infants reported fewer instances of behaviors that were interpreted as direct expressions of anger than did the parents of controls. At older ages XXY children were often described as avoiding direct expressions of aggression in interpersonal situations. Several of the parents felt that their children did not "fight back" sufficiently when provoked, that they were easily taken advantage of and too dependent on the parents to handle the conflict situations in which they found themselves. The XXY children were frequently reported as having temper tantrums if their withdrawal from conflict situations failed to solve the problem.

The indirect expression of aggression (which was coded only for children over one year of age) did not discriminate between the two groups.

B. *Developmental categories*

In this report we will present the results for the Speech and Language and the Cognitive Developmental categories. The data relating to Physical and Motor Development will be presented in a future report.

1. *Speech and language development*. By 31–36 months, five of the 10 children with the XXY chromosome complement demonstrated delayed speech and language development, whereas similar delays were not seen in the control children ($P = 0{\cdot}050$). For the five XXY children, the parents reported delays in syntactical speech, difficulties with pronunciation or articulation, problems with modulation or tone, or difficulties in finding the specific words to express their thoughts.

Formal speech and language assessments were obtained on the five XXY children who demonstrated delays in communicative skills. Three of the five children were seen annually over several years; two children were seen on only one occasion.

Receptive (understanding) language skills were age appropriate in all five children. However, reductions were present in immediate auditory memory skills. In addition to reduction in the amount of information that the children could retain at any one time, four of the five children manifested deficits in preserving the serial order of this auditorily presented material.

The five XXY children evidenced various problems in expressive language skills. Deficits in syntax were present in three of the five children; this was seen as deficits in sentence-building skills. A word-finding problem (dysnomia) was present in all five children. Similarly, all children evidenced problems in creating a coherent, organized and developed narrative; in all instances, however, the content of the narrative was appropriate situationally.

Deficits in speech sound production skills (articulation) were present in three children; the deficits ranged from mild to moderate. In one case the articulation deficit was seen as reflecting the child's inability to formulate and execute motor speech patterns (dyspraxia); this child also evidenced problems in phonemic sequencing. Two children demonstrated changes in voice production. Voice quality was husky to hoarse, with one child evidencing vocal fry.

2. *Cognitive development*. On the Bayley Scales of Mental Development, Mental Scale scores did not distinguish between the XXY and control groups (Table 4). However, expressive language skills were significantly behind comprehension in 10 of 13 XXY children, while a similar discrepancy was seen in only two of seven controls ($P = 0{\cdot}05$, Fisher exact probability test). Neither fine motor development (as measured on the Mental Scale) nor gross motor development (as measured on the Motor Scale) discriminated between the two groups. In contrast to the low verbal scores, XXY children were consistently above their chronological age levels on the various formboard tasks of spatial perception.

Short attention span, a lack of persistence with difficult tasks, or distractibility during the testing situation was reported in five of 13 XXY children and in none of the controls.

TABLE 4. DISTRIBUTION OF MENTAL DEVELOPMENT INDICES OBTAINED FROM BAYLEY SCALES OF MENTAL DEVELOPMENT

XXY

Dull normal (80–89)	Average (90–109)	Bright normal (110–119)	Superior (120+)
85	93	110	122
	100	110	127
	105	112	132
	107	112	
		115	

Controls

Dull normal (80–89)	Average (90–109)	Bright normal (110–119)	Superior (120+)
	103	110	126
	107	110	128
		117	
		118	

The Wechsler Preschool and Primary Scale of Intelligence was administered to the eight XXY children who had passed their fifth birthday prior to this report. Since none of the control children were old enough for this testing, group comparisons between XXY and controls were not possible.

TABLE 5. DISPARITY BETWEEN VERBAL AND PERFORMANCE SCALE SCORES ON THE WECHSLER INTELLIGENCE TEST FOR EIGHT XXY BOYS OVER 5 YEARS OF AGE

Age	Full scale I.Q.	Verbal scale I.Q.	Perform. scale I.Q.	Disparity	Signif. level*
5 : 0	128	116	135	+19	< 0·001
5 : 6	115	101	127	+26	< 0·001
5 : 9	102	91	114	+23	< 0·001
6 : 2	93	86	101	+15	< 0·01
6 : 3	111	100	120	+20	< 0·001
7 : 0	101	97	106	+ 9	< 0·10
7 : 4	115	105	122	+17	< 0·05
7 : 4	99	89	111	+22	< 0·01

*SATTLER, J.: *Assessment of Children's Intelligence*, Table C-18, p. 450. McGraw-Hill, New York. This table gives the probability of obtaining the designated differences between the individual verbal and performance I.Q. on the WISC and WPPSI.

A comparison of the Verbal and Performance scores for the eight XXY children revealed a discrepancy between the scores similar to the one noted on the 20-month assessment with the Bayley Scales (Table 5). The Full Scale Wechsler scores were in the average to superior range, but the Performance Scale scores were consistently higher than the Verbal Scale scores; the probability of finding this discrepancy in all eight children was computed to be 0·004 (Sign Test).

Five XXY children had completed the first grade at the time of this report. All five were referred independently by their teachers for reading evaluations because of difficulties in learning to read and spell. Formal reading evaluations indicated that three of the children had moderate to severe reading, spelling and writing difficulties. All three manifested difficulties with temporal sequencing, with multiple letter reversals and with problems sequencing letters in words; two showed poor comprehension of symbol–sound relationships in word analysis; two showed attentional problems. Two of the three children with demonstrated reading, spelling and writing pathology had previously manifested problems with temporal sequencing and a dysnomia in the speech and language evaluations. The third child had no previous speech and language evaluation since no difficulty in this area was noted by the parents.

Two of the five children referred for reading evaluation had no significant reading, spelling or writing problem in the test situation, although both had difficulties with temporal sequencing and a dysnomia in prior speech and language studies.

DISCUSSION

A method for recording, codifying and analyzing longitudinal data on behavioral development in early childhood has been presented. The method has relied in part on the verbatim reports of parents about their child's behavior and development and in part on independent observations of the child's behavior to validate the parental reports. Standardized psychometric testing and developmental assessments were employed to define precisely and quantify the developmental lags that were identified.

The more conventional methods for studying behavioral development in infants and children were not employed since we had no *a priori* basis for defining which items of behavior would be affected by the chromosome aneuploidies. Under such a circumstance, it appeared that systematic sampling of a broad spectrum of behavioral and developmental characteristics might avoid the bias that would obtain by arbitrarily preselecting a particular behavior for study, possibly assigning it greater relevance than it actually deserved.

Parental reports about the child's behavior and development have the advantage that they are based on continuous observations of the child in a natural setting that is not disturbed by the intrusion of a stranger or distorted by the artificial conditions of laboratory instrumentation. They yield a degree of descriptive detail that cannot be paralleled by periodic home observations by an investigator. However, they have the obvious disadvantage that the observer–reporter is neither trained to make systematic observations nor free from personal biases that might distort his or her recollections about the child's behavior.

Thomas *et al.* (1963) have identified the conditions required to make the parental reports valid indicators of the child's behavior. In our study the validity of parental observations was demonstrated by the degree of concordance between the information obtained from the parents and the independent assessments of behavior. Thus, the data obtained by a trained observer who had no knowledge of the child's chromosome complement were generally concordant with the data obtained through interviews of parents by an investigator who knew the child's cytogenetic diagnosis from the beginning of the study.

The central research question of the study was whether, and how, children with sex chromosome abnormalities (i.e. XXY) differed from control children in their behavioral development. The preliminary data presented suggest that XXY boys differed consistently from controls in a number of behavioral categories throughout the 3 years covered by this report. However, along other behavioral dimensions the two groups differed at some ages and were indistinguishable at others. These results suggest that the aneuploid boys differed from the controls not only in discrete behavioral categories but also with respect to maturational rates of development.

Consideration must be given to the possibility that genetic information imparted to the family influenced the development of specific behaviors described for the XXY children. However, these children came from widely diverse socioeconomic, ethnic and religious backgrounds and the parents demonstrated considerable variability in their family dynamics and child-rearing strategies. Therefore, it seems unlikely that the same genetic information given each set of parents had a sufficiently similar impact on the child-rearing practices of each family to result in the specific behavioral style or developmental lags reported above for XXY children. Rather, we would expect that the effect of such knowledge would be specific for each family and would be different in the different families being followed, depending upon the unique characteristics and background of each family.

A. *Reactive style categories*

The XXY children differed consistently from the controls for the styles of reactivity that related to activity level (low level), energy content of responsiveness (low level), response to novelty or new situations (withdrawal), expression of direct aggression (avoided) and the regularity or periodicity of repetitive functions (irregular).

Although differences between XXY and control groups in the Pliancy category were not consistent over time, one specific characteristic that was included among the behaviors scored in this category did remain stable. The XXY boys were viewed by their parents as lacking self-assertiveness in social relationships outside of the home even though in the home they displayed a normal amount of negativism associated with increasing autonomy.

Thomas *et al.* (1963) emphasized that the constancy of a child's reactive style influenced not only his social behavior, but also the parents' relationship to him. Furthermore, parental attitudes and behaviors—determined in part by the reactive style of the developing child—reinforced or modified the child's temperamental profile. This interactional effect was apparent in our study.

During the first year of life XXY infants were frequently reported as relatively easy to care for. Their high Pliancy and Distractibility ratings reflected an ease in adapting to parental wishes, to the schedules for routine child care, and to the parents' coping strategies. The low level of responsiveness ratings reflected a mild, even disposition that caused the parents to consider these children easy to care for and a pleasure to be with even though the children were at times irregular in their eating and sleeping patterns.

When XXY children continued to show a pliant, mild, even-tempered adaptation to social situations, some parents became concerned that their children lacked the independence and self-assertiveness of other children of the same age or of siblings at the same stage of development. Therefore, when the XXY children became more assertive, active and negativistic during the second year of life, many parents felt reassured by the change. Unlike the parents of control children (who often referred to the "terrible twos" with dismay) some parents of XXY children were pleased with and actively encouraged negativistic behavior and a developing sense of autonomy in their children.

Parents of XXY boys also viewed with concern the children's continued reluctance to participate in new and challenging situations, their difficulties in interacting meaningfully and assertively with peers and their unwillingness to "fight back" when confronted with aggressive situations.

B. *Developmental categories*

A number of reports concerning XXY children and adults ascertained from biased and unbiased samples have noted that the affected individuals suffered frequently from developmental speech and language delays as well as learning disabilities (Annell *et al.*, 1970; Caldwell and Smith, 1972; Crandall *et al.*, 1972; Garvey and Mutton, 1973; Kivowitz and Corcoran, 1971; Nielsen *et al.*, 1970; Leonard *et al.*, 1974; Puck *et al.*, 1975). Furthermore, when the Verbal and Performance I.Q. values were compared, it was found frequently that XXY individuals showed Performance I.Q. scores that were higher than Verbal I.Q. scores (Garvey and Mutton, 1973; Nielsen *et al.*, 1970; Pasqualini *et al.*, 1957; Puck *et al.*, 1975; Theilgaard, 1972), although this was not a consistent finding (Annell *et al.*, 1970; Hunter and Hoggart, 1967; Money, 1963, 1970). These results are the reverse of those found in girls with Turner's syndrome (i.e. sex chromosome monosomy; 45, X), where the Verbal I.Q. scores tend to be higher than the Performance I.Q. scores (Alexander *et al.*, 1964; Money, 1963, 1970; Shaffer, 1962).

Reports in the literature that the intelligence of XXY individuals is generally impaired require consideration since they appear to contradict the data presented in this study. Our XXY and control infants did not differ in the distributions of their Mental Developmental Indices. It must be emphasized, however, that the Developmental Quotient scores of infants within the normal range of intelligence have generally been found to be poor predictors of I.Q. in later life. It is only with retarded infants that the infant testing is a more reliable predictor of future I.Q. scores. Since reports in the recent literature have emphasized that the intellectual impairment of XXY adults is usually mild (Annell *et al.*, 1970; Leonard *et al.*, 1974; Moor, 1967; Polani, 1969; Puck *et al.*, 1975), it may be assumed that most XXY infants fall within the normal range of variation for intelligence and that infant testing will not predict their I.Q. scores as adults.

Among the seven XXY children who have been tested at 5–7 years of age, six showed a significant discrepancy between Verbal and Performance scores. Although the Verbal scores were within the normal range, they depressed the Full Scale I.Q. scores. The high distractibility of these children affected their performance even further.

Since the children in our control sample were not yet old enough for the 5-year psychometric assessment at the time of this reporting, it remains to be seen whether

XXY children still demonstrated better performances on nonverbal items than controls. If this finding is still evident, it must be determined if the higher Performance scores are sufficient to balance the lower Verbal scores so that the groups will not differ with respect to Full Scale scores. The depressed Verbal score might be responsible for the lower I.Q. scores reported frequently for older XXY individuals.

The results are far too limited to justify any long-range conclusions or predictions about future development. However, the preliminary data, when considered in relation to cross-sectional observations on older Turner's syndrome patients, raise the possibility that pathological variations in sex chromosome complements (XXY, XO) may be indirectly associated with the development of brain mechanisms having a primary responsibility for the processing of speech and language functions.

It is obvious that these observations must be subjected to future studies in order to devise remedial techniques for early intervention with XXY children, before language and reading difficulties become chronic.

SUMMARY

A method for recording, codifying and analyzing longitudinal data on behavioral development was presented as it was employed in a long-term developmental study of 13 XXY and eight control children in order to identify behavioral characteristics that discriminated between the two groups. The XXY children frequently demonstrated developmental language deficits, which were manifested as problems in expressive language skills and as learning disabilities. When compared to the controls, the aneuploid children also showed lower activity levels, were more mild in the energy content of their responsiveness, responded to novel stimuli more commonly by withdrawal, were more pliant in their social interactions and had difficulty organizing their daily routines to conform to parental expectations. Distractibility appeared to be a problem for them after 25–30 months of age.

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CHILDHOOD AUTISM IN AFRICA

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INTRODUCTION

THE LITERATURE on the syndrome of childhood autism contains no descriptions of cases occurring amongst the indigenous populations of developing countries. This may be because, although the syndrome is known to occur, it has not been reported; or, although occurring it is not recognized; or, it does not occur.

The question is of some importance. Aetiology of the syndrome is unknown, views about causes ranging across the spectrum from psychological to organic factors. Related to different conceptions of aetiology are widely different views on the nature of the "basic" psychological impairment, which in turn relate to different views about the relative importance of particular symptoms for purposes of case definition. In a recent review, for example, "social withdrawal" is seen as a necessary condition for case recognition, but as aetiologically secondary to more "basic" impairments in language and cognition. Moreover, the balance of evidence is against the view that autism results solely from psychogenic influences, but psychogenic mechanisms may be influential in the development of secondary handicaps (Rutter *et al.*, 1971, p. 150). According to this argument therefore, some symptoms which are important for case recognition may vary according to the psychological environment. We need only add the reasonable assumption that the psychological environment for children in developing countries is maximally different (in unspecified ways) from that in the technologically developed countries where childhood autism has been described, to see the relevance to the above argument of a cross-cultural study.

To ask "does childhood autism occur in such-and-such a place" may mean first, are there children there who fit certain specified behavioral criteria; second, is the diagnostic label used there; and (perhaps) third, do elements of the syndrome occur, but in patterns which would not satisfy the specified criteria. From our preliminary enquiries, limited to Africa, it became evident that little is known about the occurrence there of mental handicap or behaviour disorders generally (e.g. McGregor, 1967; Edgerton, 1968, 1969; David, 1972; Jelliffe and Bennett, 1972). Limited medical and educational resources give priority to quantitatively more pressing developmental problems such as malnutrition, infectious diseases, blindness and deafness (e.g. Sinnette, 1970; Goodall, 1972; Kiev, 1972). On the other hand, a traditionally recognized abnormality with some similarities to childhood autism occurs in Senegal (Zemplini and Rabain, 1965; Ellenberger, 1968); a report of

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hospital admissions, also from Senegal, included amongst those labelled "schizophrenia" some as young as 2 years (Ortigues *et al.*, 1966); an unpublished report from Nigeria described four autistic children (Longe and Asuni, 1972); and a survey in East Africa (Commonwealth Secretariat, 1972) as well as personal communications from individuals working in paediatrics, psychiatry and special education in several developing countries in Africa, claimed that autistic children "undoubtedly exist" there.

It was clear from these preliminary enquiries that autistic-like behaviour does occur in developing countries in Africa. It was not clear whether the behaviours occurred in constellations which would satisfy criteria for childhood autism used elsewhere.

The work described here is exploratory. The general aim was to identify and describe children in selected developing countries in Africa, who exhibited autistic-like behaviours. Specifically the study had four aims: (1) to identify "possible" cases; (2) to subclassify these according to how well they met criteria for recognition of the syndrome; (3) to explore differences amongst the subgroups, and (4) to compare the frequency of individual symptoms found in the African sample with those in a British sample.

THE COLLECTION OF MATERIAL

Childhood autism is not common. Even in specialist clinics in countries with elaborate children's services, only 7 or 8 may be seen in a year (Lotter, 1966). In Africa, where services are generally rudimentary, we could not expect to find many possible cases in any one centre. We decided therefore to examine readily available groups of mentally handicapped children in many different centres rather than undertake an intensive search in a smaller area.

Consequently, nine major cities were visited during 1975–1976 in six countries in Africa: Accra (Ghana); Lagos, Ibadan (Nigeria); Nairobi (Kenya); Lusaka (Zambia); Salisbury (Rhodesia); and Cape Town, Johannesburg, Durban (South Africa). The list includes every accessible, English speaking town of any size in Sub-saharan Africa in which we were assured of some cooperation. Excluding Salisbury and the South African cities, their populations range from 400,000 (Lusaka) to 1 million (Lagos). Although relatively more highly industrialized, and therefore not "developing countries" in the same sense as the others, Rhodesia and South Africa were included in the search because both have a predominantly African population and (at least in South Africa) a relatively more elaborate system of mental health services on which our search depended.

From information provided* by government health and education departments, parents' organizations, mental hospitals, and individual psychiatrists, a list of all local aggregations of African mentally handicapped children was compiled for each city or region. We visited each of these places in order to observe the children there.* Wherever possible case records of all children were examined. A few children thought by informants to be autistic but who were not in educational or custodial institutions, were observed in their homes.

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Recognition of autistic behaviours was guided by the Creak (1961) criteria in a form developed in an epidemiological survey in England. This 24-item list (Lotter, 1967) was adopted as a basis for screening the children seen. It includes several items in each of five categories: speech, social behaviour, peculiarities of movement, peculiarities related to hearing and repetitive–ritualistic behaviour. Some of the items were difficult to apply and amendments to the schedule were made according to our experience in its use. The revised form is included as Appendix 1.

The first step in screening was to select, from amongst all the mentally handicapped children seen those for whom there was any suggestion of autistic behaviour. Identification of "possible" cases for this first stage of screening meant that we included: (a) any child about whom the terms "psychosis", "autism", "schizophrenia" (or any related term) appeared in case records, or in interviews with informants; (b) any child whose behaviour in written or verbal reports was described as including marked signs in any of the five categories of our criteria; (c) any child in a class or school specifically for autistic children; (d) any child who when observed by the writer, showed any marked behaviour described in our criteria.†

Altogether some 1312 children were seen of whom 30 were selected by the first screening. The number of "possible" cases found and the sources explored are shown in Table 1. Only institutions for the mentally handicapped were systematically sought out, and included about half of all the children seen, i.e. the two top rows of Table 1. The other places listed were visited only during the early phases of the

TABLE 1. CHILDREN SELECTED BY INITIAL SCREENING: BASIS OF SELECTION AND WHERE OBSERVED

		Basis of selection*				
Where observed	No. children seen	A	B	C	D	No. children selected
Psychiatric hospitals (inpatient)	265	2	3	—	1	6
Residential "homes", day care centres/schools for retarded; child guidance centres	481	5	6	5	5	21
Motherless babies homes, schools for deaf, day care centres for normal children	564	1	—	—	—	1
Other	2	2	—	—	—	2
Totals	1312	10	9	5	6	30

*A, diagnosis involving autism, psychosis, etc. B, report (verbal or records) of some criterion behaviour. C, special school/class for autistic children. D, own observation of some criterion behaviours.

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*Owing to certain local difficulties unconnected with this study, it was not possible to visit certain institutions in South Africa.

†Many severely subnormal children in institutions were unable to speak. Such children were therefore included only if muteness was accompanied by some other relevant behaviour.

study (in Ghana and Nigeria). Places in schools for the deaf, and to a lesser extent daycare centres for normal children, were generally much sought after, and learning difficulties or behaviour problems resulted in a child being quickly removed to make place for a more amenable candidate. Consequently, the chance of finding a mentally abnormal child there was very slight. The motherless babies' home was visited following a report to us of an "autistic" child there. This was an unusual case (the child was about 7); most of the other children there were under 24 months old, and are adopted or fostered as early as possible. The two "other" children lived at home and were referred to us by informants as "possibly" autistic.

The numbers of children seen are not proportional to the total populations of the countries visited (Table 2), nor do the proportions of children selected from amongst those seen in the various countries have any epidemiological significance. Institutions were visited whenever possible, and the children in them were examined as well as circumstances allowed. However, these circumstances were very variable from place to place so that sampling was not systematic enough to allow quantitative comparisons amongst the countries visited. Table 2 merely shows that some possible cases were found in every country visited, and that between 2 and 3 per cent of the children seen were selected as possible cases.

The 30 children identified in these ways were observed by the writer, and additional descriptions of their behaviour were sought from psychiatrists, teachers, ward attendants, and in a few cases, social workers and parents. The behavioural descriptions and other information about each case were recorded on standard forms.

ANALYSIS OF THE MATERIAL

Definition of subgroups

The accumulated observations for each of the 30 possible cases was summarized under the five symptom categories: speech, social behaviour, peculiarities of movement, "auditory" peculiarities, and repetitive–ritualistic behaviour (see Appendix 1). The writer then reviewed each case, assigning a "score" to each category on a 0–5 scale, according to whether the symptom was judged to be absent (0) or very marked (5). The cases were then ranked according to the summed ratings.

Because early onset is an important defining characteristic of childhood autism (Kolvin, 1971), and our information about onset was incomplete, we attempted to reduce the heterogeneity of the group by excluding the eight children who were 13 years or older when we saw them. Having deleted these eight names from the ranked cases, we subdivided the remaining 22 into three categories: group A, consisting of the top three cases in the ranking which therefore showed the most characteristic patterns of autistic behaviour; group B, consisting of the next six cases which included all those with some marked autistic behaviour; and group C, consisting of the remaining 13 cases.

The exact placing of the cut-off points was arbitrary. In order to assess reliability of our procedures, a colleague* familiar with the syndrome independently rated the 22 cases. Subdivision at the third and ninth ranked cases resulted in subgroups in

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*We express appreciation to Dr. M. Peters for his assistance.

TABLE 2. CHILDREN SEEN AND SELECTED BY INITIAL SCREENING: BY COUNTRY AND TYPE OF INSTITUTION

Type of institution	Country and no. of children												Totals	
	Ghana		Nigeria		Kenya		Zambia		Rhodesia		South Africa			
	See	Select	See	Select	See	Select	See	Select	See	Select	See	Select	See	Select
Mental hospitals	32	3	12	—	20	1	51	2	—	—	150	—	265	6
Homes, day care/schools for M.R., child guidance clinics, private referral	132	5	189	4	91	4	12	1	25	2	34	7	483	23
Motherless babies' homes, schools for the deaf, day care centres for normals	130	1	224	—	—	—	—	—	—	—	210	—	564	1
Totals	294	9	425	4	111	5	63	3	25	2	394	7	1312	30

which there was disagreement on only two cases. The top three ranked cases (group A) were the same in both ranks.

Comparison of the subgroups

Comparisons amongst the three subgroups were made for sex, age, ethnic background, speech and grade, epilepsy and "social class". For purposes of the comparisons, the nine children in groups A and B will be called "autistic", and the 13 in group C "non-autistic".

In group A there were no girls, and groups B and C included similar proportions of boys and girls (3:3; 7:6). The autistic groups AB combined thus had a 2:1 excess of boys, and this excess was greatest in the most markedly autistic group A.

At the time we saw them 14 of the children were 7–9 years old, and eight were between 10 and 12 years old. All in group A were under 9 years old. Seven of the nine autistic children in groups AB were 7–9 years old; group C was equally divided between younger and older children. Thus, the most markedly autistic children were found amongst the youngest children seen. No confident estimate of age of onset was possible in the majority of cases. Almost all were reported to have been slow in developing, and in most a prominent complaint was retardation or failure of speech development.

Our aim was to find autistic behaviour in indigenous African children. For our purposes this meant black African children raised by black African parents. Of all the 22 children, six were anomalous in this respect; five of them were of mixed race, found in South Africa, and one was a child of West Indian parents adopted into an African family. The autistic groups A and B combined, included a larger proportion of these "anomalous" cases (three out of nine) than the non-autistic group C (three out of 13). Of the three most markedly autistic children (group A), only one was "African" in the sense described above. Because people of mixed race in South Africa are culturally European, and this affects the interpretation of our findings, the five mixed race children are separately identified in the comparisons reported below.

The 22 children were dichotomized according to the presence or absence of speech, and degree of apparent mental defect. Few had been formally assessed, and nearly all who had been were severely subnormal (I.Q. below 50). We considered children relatively more competent (subnormal) if they attended normal school; or understood speech and used play material constructively; or showed skill in formboard completion, could ride a tricycle and eat with a knife and fork. The less competent children (severely subnormal) were those with little or no comprehension of speech, and no other activity comparable with the above. Many of them were incontinent, might eat or play with faeces, showed no competence in self-care and were generally socially helpless.

Of the 22 children, 16 were unable to speak, and 12 were very severely subnormal (Table 3). None of the three most markedly autistic children (group A) was severely subnormal. On the other hand, of the six children with some marked autistic behaviour (group B), five were severely subnormal and without speech. Autistic behaviour was thus associated with widely different degrees of intellectual impairment, and was observed in speaking as well as non-speaking children.

TABLE 3. NUMBERS OF CHILDREN IN BEHAVIOURAL SUBGROUPS DISTINGUISHED BY SPEECH AND GRADE

	Non-speaking		Speaking	
Behavioural subgroup	Subnormal	Severely subnormal	Subnormal	Severely subnormal
A	2*†	0	1	0
B	0	5	1*	0
C	4*	5*	2	2
Totals	6	10	4	2

*Includes mixed race case(s).

†Includes West Indian child.

Epilepsy was the only indicator of possible brain dysfunction about which satisfactory information could be obtained. Of all the 22 children 27 per cent were epileptic (Table 4). Only one (11 per cent) of the autistic children was epileptic, compared with five (38 per cent) of the non-autistic group C. Epilepsy was less common in the subnormal than the severely subnormal children and this was true also within the autistic and nonautistic subgroups. Moreover, while none of the subnormal autistic children had epilepsy, 33 per cent of the subnormal non-autistic children were reported to be epileptic. Generally therefore, epilepsy occurred relatively more often in the non-autistic, and the severely subnormal children.

TABLE 4. NUMBERS OF CHILDREN IN BEHAVIOURAL SUBGROUPS DISTINGUISHED BY GRADE AND EPILEPSY

	Children with epilepsy*		
Grade	Group A ($N = 3$)	Group B ($N = 6$)	Group C ($N = 13$)
Subnormal ($N = 10$)	0	0	2
Severely subnormal ($N = 12$)	0	1	3
Totals	0	1	5

*None of the ethnically "anomalous" children had epilepsy.

Finally, we looked at the social background of our cases. Social class indices comparable to those used in the West cannot be readily derived in developing countries (Lloyd, 1966). Instead we made a rule-of-thumb classification that was usable with the available material. Adopting local usage, we defined as "élite"* any child who had been born abroad,† or had lived for any period abroad, or whose parent(s) had lived for any period abroad, or whose father had a non-manual job. This definition represented, as well as local privilege, a relatively greater exposure to Western ways of life and thought. None of the intergroup differences found by using this scheme were statistically significant. However, the differences were all in the same direction. For example, excluding the five mixed race children, 71 per cent (five out of seven) autistic, and five out of 10 non-autistic children were élite. Including the mixed race children the difference was larger (78 per cent vs 38 per cent). In the entire group of 22 children, 54 per cent were élite, and when the eight children originally excluded on grounds of age were included, 63 per cent of all the 30 children originally selected were élite.

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*A slight broadening of the term commonly used in the countries we visited to denote social and material privilege.

†In all cases "abroad" meant Britain, Europe or North America.

In all of this two things are clear: first, however they were subsequently subdivided, there was amongst all the children originally selected as possible cases an excess of the élite. (There are no comparable figures, but it is impossible that over half the relevant populations were "élite" in the sense we defined.) Second, this excess was greater amongst the autistic than amongst the non-autistic children.

Comparison with the Middlesex group

The question here was whether particular autistic behaviours appeared with similar frequency in the African autistic children and autistic children described elsewhere. The autistic children chosen for comparison were those described in an earlier study by the present writer in Middlesex (Lotter, 1967) for whom similar behavioural descriptions were available.

Some restrictions were necessary. First, because the African sample included mostly institutionalized children, only the 17 Middlesex children who were placed in institutions or training centres (and therefore would be classed as severely subnormal) were included for comparison. Second, the two racially mixed children in the African autistic group were excluded. We were left with seven African and 17 Middlesex autistic children. Third, the speech and social behaviour categories were not included in the comparison, because only one of the seven African children could speak, and because the social behaviour items had been altered for use in Africa. In both groups only behaviour that was markedly present was considered.

The two groups were compared for 10 behaviours, drawn mainly from the categories motor peculiarities, auditory peculiarities, and repetitive–ritualistic behaviour (Table 5). Taking a 20 percentage-point difference as of some interest, three groups of symptoms could be distinguished. First, self-spinning, jumping, covering ears, and spinning of objects appeared with similar (and low) frequency. The single case appearing in the African sample in three of these items, is the same

TABLE 5. COMPARISON OF AFRICAN AND MIDDLESEX AUTISTIC CHILDREN

Behaviour	No. and percentage of cases			
	African		Middlesex	
Self spinning	1	(14%)	2	(12%)
Jumping	2	(29%)	5	(29%)
Flapping	0		4	(24%)
Other marked movements	4	(57%)	6	(35%)
Covers ears	1	(14%)	3	(18%)
Spins objects	1	(14%)	2	(12%)
Other elaborate ritual play	0		5	(29%)
Carries, bangs, etc. objects	4	(57%)	5	(29%)
Self-aggression	0		4	(24%)
Rocks, bangs head	1	(14%)	8	(47%)

child. Second, no instance of flapping, elaborate ritual play or self-aggression was observed in the African sample, and only one marked case of rocking. These behaviours were therefore more frequently seen in the Middlesex group. Third, carrying, banging and twisting objects, and "other" marked movement peculiarities were more often rated in the African group. What these differences reflect is the great rarity amongst the African children we saw, of any complex manipulation of objects. Thus none engaged in "elaborate ritual play", but crude repetitive manipulation of objects (carry, bang, etc.) was common, as were "other" marked movement peculiarities. Where the latter categories did not overlap, the behaviours involved were unclassifiable arm or whole body movements. Considering the generally low grade and institutional placement of most of the African children, rocking and headbanging were rarely seen.

There were great variations from case to case and amongst centres visited, in the completeness of case files and in the information obtainable from informants. There was a possibility therefore, that the allocation of children to the three behavioural subgroups reflected information available rather than characteristics of the children. When we re-examined our accumulated data for each case it seemed that the quality of information was not generally different for cases in the different groups. In only two cases was the information markedly more voluminous. These were the two children drawn to our attention by local psychiatrists. Neither child was in an institution, and each was seen accompanied by its mother. One of them was placed in group B, the other in group C. We believe therefore that our classification was not influenced in any important way by systematic differences in the availability of information about individual cases.

DISCUSSION

The survey reported here confirmed the expectation derived from our preliminary enquiries, that some of the behavioural symptoms which define the syndrome childhood autism do occur amongst children in developing countries in Africa. Moreover, using criteria and selection procedures similar to those employed in a study in Britain, we were able to identify some children who exhibited accumulations of these behaviours comparable to those in children classified as autistic in the British study.

This was not a study of prevalence. Yet from indirect evidence the numbers of autistic children found was much smaller than expected. For example, in Middlesex between 5 and 8 per cent of all severely subnormal children would be expected to show some marked autistic behaviour (Lotter, 1966). At least 400 of the 1312 children seen in Africa could be considered severely subnormal, and we were able to identify altogether only nine children as autistic, not all of whom were severely subnormal. If the incidence of childhood autism is assumed to be similar in Africa and Britain, there is no obvious reason why relatively fewer such children should be found amongst the known severely subnormal population in African countries. A possibility therefore is that autistic symptoms generally are less common in the African countries we visited, than in Britain.

A further possibility is that certain specific aspects of the syndrome occur less frequently in the African populations. In our comparison of symptoms there was for example some indication that certain repetitive movements (e.g. flapping, rocking, headbanging) as well as more elaborate ritualistic activities involving objects were uncommon. In institutional populations these kinds of activities may be important in the selection of "possible" autistic children. Stereotypes generally are reported to be very common amongst American institutionalized children (Kauffman and Levitt, 1965a, b). Our general impression, confirmed informally by psychiatrists and other institution personnel in every country we visited, was markedly different from that described by Kauffman and Levitt who state, "a visitor to an institution for mental defectives is quickly impressed with the large number of patients engaged in various forms of stereotyped behaviours" (1965a, p. 467).

In several other ways our findings in the African sample correspond with those found elsewhere. Autistic behaviour occurred in both mildly and severely subnormal children and in mute as well as speaking children. In comparison with non-autistic handicapped African children relatively more boys than girls were affected; the most characteristically autistic children showed relatively less evidence of brain dysfunction, and there was a relative excess of socially privileged families.

The number of male autistic children was excessive only in relation to the African comparison group; the ratio of 2:1 is lower than the 3 or 4:1 expected for autistic children in Western samples (e.g. Lotter, 1966; Rutter and Lockyer, 1967). The occurrence of epileptic seizures corresponds to the pattern in British groups of autistic children: the one child amongst the African autistic children who had seizures began to have them only when she was 11 years old. In most of the non-autistic children seizures had begun in early childhood. According to the results of follow-up studies (Rutter *et al.*, 1967) further children in the African autistic group may be expected to develop seizures as they get older.

The social background findings are ambiguous. On the one hand, the excess of élite children amongst all those selected as "possible" cases may mean that proportionately more élite families use the limited facilities available. Moreover, the institutions we visited were located in urban areas where the élite disproportionately congregate. We do not know whether children who use social services in Africa are drawn disproportionately from the élite. Available evidence is contradictory: Minde (1977) found almost 40 per cent of all children attending a psychiatric clinic in Uganda came from "upper or middle-class" homes, while Gans (1963) found no marked bias in the social background of children who attended a paediatric clinic in Lagos. On the other hand, the bias we found was greater amongst the autistic than amongst the non-autistic children.

The relationship between the occurrence of childhood autism and social class, first described by Kanner (1943) cannot readily be accounted for by selective referral (Lotter, 1967). Attempts to establish a relationship between occurrence of the syndrome and parental personality or attitudinal characteristics have not been successful (Rutter *et al.*, 1971). Our findings in Africa invite a different approach to the question, involving the assumption that the relative prominence given to certain symptoms in case definition may determine the social background characteristics of the sample. A case can be made for this view, as well as for the specification of "autism" or "social withdrawal", and repetitive, ritualistic or compulsive behaviours as the symptoms which may be involved.

For example, Kanner's assertion of social class bias was based on cases in which the essential features were "autistic aloneness" and an "insistence on the preservation of sameness". Amongst autistic children defined by wider criteria, those most closely resembling Kanner's cases had the highest proportion of middle-class families (Lotter, 1966). Moreover, there is some evidence that the symptoms "severe social withdrawal" and "severe autism" are recorded relatively more often in psychotic children with professional or executive class parents (McDermott *et al.*, 1967).

Two predictions can be based on this view. First, if some highly visible symptoms which have been prominent in the recognition of childhood autism are peculiarly related to social class, and if the view that these are secondary phenomena is reflected in criteria for case definition which give greater weight to other features thought to be more basic, then groups of autistic children defined by these revised criteria will not exhibit a biased social class distribution. Could this argument, for example, explain the results reported by Ritvo (1971), for whom "perceptual inconstancy" is the basic disorder, and who finds no social class bias? Similarly, on the assumption that the primary defect involves cognition and language, Wing, (1969) included only 12 items referring to "attachment to objects and routines" in a list of 146 behaviours used to compare autistic, aphasic and other children. Would such a list if used for the selection of cases, produce a group with the expected social class bias?

Second, since the tendency for parents of autistic children in the West to have highly educated parents is as marked as the social class bias (Lotter, 1967), and since education in most developing countries is modelled on Western systems (Unesco, 1972), autistic symptoms peculiarly related to parental level of education should be relatively uncommon in developing countries where not many people are "highly educated". This argument provides a *post hoc* explanation for our own findings in Africa, as well as those of Longe and Asuni (1972) whose four Nigerian autistic cases all had parents who were university graduates, or in professional occupations, and the claim by Hoch (1964) that graduates and army officers predominated amongst the parents of young psychotic children in India.

These ideas are highly speculative, involving assumptions about the relation between "basic" and "secondary" symptoms (e.g. Rutter, 1974; Boucher, 1977) as well as the effects of education or "schooling" in developed and developing countries (cf. Inkeles, 1969), while saying nothing about why some autistic behaviours might be related to parental educational level. Nevertheless, two related propositions that are testable in developed countries can be derived from the argument. First, that case identification based on criteria which emphasize underlying or "primary" handicaps will not define autistic groups with a biased social class distribution (or, more generally, that some "autistic" behaviours are class related). Second, and consequently, that the prevalence (and epidemiological characteristics generally) of childhood autism will differ according to whether "primary" or "secondary" symptoms are emphasized in criteria for case definition.

The accumulation of cases that we have made across several countries can only be justified on grounds of practicality, and by assuming that in spite of the differences amongst the countries visited, they were in some important respect more similar than they were different. Our argument assumes that some such cultural similarity is related to the persistence of "traditional" customs and ways of thought in contrast to Western, technological ones.

A major, although unavoidable, defect in the present study was the absence of information about onset. While we are confident that all the children we classed as "autistic" were recognizably abnormal before the age of 5 years, we cannot say when autistic symptoms were first apparent. It seems to us that any work in African developing countries which relies on retrospective information faces the same difficulty. To get this sort of information about children with uncommon and perplexing problems in Africa, requires an intimate knowledge of local customs, beliefs and aspirations. This in turn means coming to terms with local social service and research priorities. Questions that can be raised about difficult children are easily submerged in the mass of other health-related problems in developing countries. Nevertheless, theoretical issues arising out of experience in developed countries can, we believe, be fruitfully pursued in developing countries to the eventual benefit of both.

SUMMARY

Mentally handicapped children, mostly in institutions, were screened in five countries in Africa in order to explore the usefulness of Western criteria for the recognition of childhood autism in developing countries. Some 1300 children were seen, of whom 30 had some autistic-like behaviour. Nine were autistic according to Western criteria. Autistic behaviour was found in speaking and non-speaking children of all grades; in sex ratio, occurrence of epilepsy and social background the African group was broadly comparable to Western groups. Behavioural comparison with a British sample suggests some prominent features of the syndrome are very uncommon in Africa. Implications for recognition and classification are discussed.

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APPENDIX 1

REVISED CRITERIA FOR BEHAVIORS

Speech (speaking children only)

1. Echolalia.
2. Repetition of phrases.

Social behaviour

3. Marked impression of "autism" in relationship to observer.
4. Indifferent to people, unresponsive to approach.
5. Marked attempts at self isolation.
6. Solitary amongst other children.

Movement peculiarity

7. Self-spinning.
8. Jumping.
9. Arm/hand flapping.
10. Other marked mannerisms.

Auditory peculiarities

11. Behaves as if deaf.
12. Covers ears with hands.
13. Distress at noise.

Repetitive–ritualistic

14. Elaborate ritualistic play with objects.
15. Spins objects.
16. Carries, bangs, or twirls objects.
17. Catastrophic response to change.

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THE MEASUREMENT OF TEMPERAMENT IN 3–7 YEAR OLD CHILDREN

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Although child development professionals have been increasingly impressed with the importance of temperament in personality development, progress in research and practical applications of the concept has been hampered by the paucity of suitable techniques for measuring it objectively. Brazelton (1973) recently introduced his Neonatal Behavioral Assessment Scale for research on newborn infants, and the infant temperament questionnaire of Carey (1970, 1972a) provides a means of determining reaction patterns in 4–8 month old infants. However, neither of these techniques is suitable for the study of temperament in early childhood. For the period of 3–7 years there appear to be available only two research techniques: (1) the interview of Thomas *et al.* (1963) of the New York Longitudinal Study (N.Y.L.S.) and other interviews derived from it by Graham *et al.* (1973) and Garside *et al.* (1975) and (2) the E.A.S.I. temperament questionnaire by Buss and Plomin (1975). Two of these cover part of this period, two are not at all specific for this age group, and none has been used clinically.

This report describes the development of a parent rating technique that measures temperament in 3–7 year old children simply but apparently with sufficient rigor for clinical and research use. The term "temperament" is used here to mean the behavioral style of the child in interaction with the environment. While the origin of temperament has not been precisely delineated, there is evidence that these characteristics are present soon after birth and are somewhat stable into early childhood, but constantly interacting with the environment. As measured in early childhood, behavioral style is the product of many factors including the child's constitution, previous experience and developmental level.

METHODS AND SUBJECTS

Background

The theoretical basis of our project was the conceptualization of temperament introduced by Thomas *et al.* (1963, 1968, 1970) in the New York Longitudinal Study. Their investigation is probably the most comprehensive and covers the longest period of observation. On theoretical and clinical grounds they selected nine variables for study: activity, rhythmicity of biological functions, initial approach–withdrawal, adaptability, intensity, mood, persistence, distractibility and sensory threshold. From these categories they derived three clinically significant clusters of traits: (1) the difficult child (arrhythmic, low in approach and adaptability, intense and predominantly negative in mood), (2) the easy child (rhythmic, approaching, adaptable, mild and positive), and (3) the slow-to warm-up

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child (low in activity, approach and adaptability, and negative, but variable in rhythmicity and mild in intensity). About 35% of their sample did not fit into this system of diagnostic clusters. The difficult and slow-to-warm-up children are harder for parents to rear, and were shown by Thomas *et al.* (1968) to have a greater risk of developing psychiatric disorders. When easy children developed behavior problems, it was more likely to be due to situational stresses.

Carey's infant temperament questionnaire (1970, 1972a) is a conversion of the research interview of Thomas *et al.* into a relatively simple instrument suitable for clinical and research use. It consists of 70 statements, each having three options for completion, which describe the infant's typical reactions in various situations such as eating and sleeping. Each item rating yields a score as high, intermediate, or low in one (or more) of the nine temperament categories. Diagnostic clusters developed were: easy, intermediate and difficult, which included all infants. In this formulation the slow-to-warm-up cluster was dropped and all infants between difficult and easy were designated intermediate and subdivided into intermediate high (more difficult) and low (more easy).

Besides requiring much less professional time for administration and scoring, a parent rating instrument has two other possible advantages over interview methods. (1) The scoring should be more objective and standardized since every parent is asked exactly the same questions about reactions appropriate for the age group of the child. The need for a specially trained scorer is thereby obviated. (2) The wording of items can be chosen with care so as to yield a score clearly in only one category, thus avoiding the conceptual and statistical blurring of multiple category interpretation occurring in the N.Y.L.S. interview (Thomas *et al.*, 1963).

Test construction

Items were written from published descriptions of behaviors associated with each of the nine dimensions of Thomas *et al.* (1963, 1968, 1970) and other behaviors judged logically consistent with the category definitions. Each item contained a description of child behavior within a specific context. For example, "How often does the child fall asleep as soon as he/she is put to bed?" represented the rhythmicity category with respect to patterns of sleeping. Behaviors indicative of both high and low standing within each category were included in the item pool.

Initial item selection was determined by inter-judge agreement of category designation. Eight judges (drawn from the Department of Educational Psychology, Temple University) familiar with the N.Y.L.S. research were asked to assign 135 potential items to one of the nine categories, using category definitions as a guide. Each item was placed in a single category by each judge. Only items correctly placed by five of the eight judges were included in the pretest phase.

An analysis of the classification errors showed a large degree of overlap in definitions of individual categories. Items in the distractibility category were particularly difficult to identify. Items defining high distractibility were misplaced into adaptability; items indicating low distractibility were often judged as persistence items. To correct this difficulty the distractibility category was redefined to include only responses to extraneous stimuli, and soothability items were dropped. On the other hand, soothability items were retained in our recent revision of the Infant Temperament Questionnaire (Carey and McDevitt, in press) because of their pertinence to mother–infant interaction].

Pretest

On the basis of the item ratings a 112 item version of the instrument was devised. A six point rating scale from "almost never" to "almost always" was employed. Rating instructions modeled after the Devereux Behavior Rating Scale for Children of Spivak and Swift (1966) were printed on the cover sheet of the instrument. Instructions advised the mother: (1) to consider only the child's recent and current behavior, (2) to judge on her own impressions of the child, and (3) to consider each description independently. In addition, information was provided about how to rate accurately using extremes when appropriate, basing judgements on first impressions and attempting every item.

The preliminary version was pretested on 53 kindergarten and first grade children attending a private suburban school. Items were evaluated on the basis of intercorrelations with the designated temperament category and the total instrument. Items correlating most highly with the assigned categories were retained. Items correlating poorly ($\leq 0·30$) and items correlating with several different categories were revised or eliminated. New items were constructed on the basis of pretest findings. Effort was made to include items from each of the content areas designated by Thomas *et al.* (1963, 1968, 1970) so that the items in each category were representative of behavior in a number of different situations. Items were, however, arranged randomly as to content area and category in order to avoid a response set by the rater. This was particularly important for items of the same category but slightly differing situations.

Revised version

The initial assessment on the small group of children resulted in a 108 item version used for test analysis. Item format was changed from question form to statement form. The resulting instrument was termed the Behavioral Style Questionnaire (B.S.Q.).* B.S.Q.s were sent to 369 parents of 3–7 year old children in the private pediatric practice of the second author (W.B.C.). Three hundred and fifty questionnaires (94·9%) were returned. There were 175 males and 175 females. The age distribution of the sample was as follows: 3–0 to 3–11 $n = 65$, 4–0 to 4–11 $n = 86$, 5–0 to 5–11 $n = 88$, 6–0 to 6–11 $n = 91$, 7–0 to 7–4 $n = 20$. Nearly all of the children were white. All social classes were represented in the sample but there was a preponderance of families in which the father had a professional or executive occupation. Fifty-five per cent of the fathers and 41% of the mothers were college graduates.

Fifty-five of the respondents were randomly selected for an assessment of one month test–retest reliability. Fifty-three of these forms were returned (96·4%).

Item performance was evaluated as in the pretest. Eight items showing low relationships with the designated categories were dropped, resulting in a final 100 item instrument. The number of items per category ranged from nine (rhythmicity) to 13 (activity level). Protocols were rescored for 100 items.

Rating time and methods of scoring

Mothers in the test–retest sample were asked to indicate how long it took to complete the B.S.Q. Responses ranged from 10 to 60 min with a median time of 19 min. We estimate that the average time for the first completion would be about 5 min longer or 25 min.

Though data for the standardization sample were scored by computer program, a method of clinical scoring was developed following procedures introduced by Carey (1970). The tester checks off the response for each item (range: 1–6) on the scoring sheet arranged by category. Item responses are totaled and divided by the number of items rated. This procedure is repeated for each of the nine categories. Category scores (range: 1–6) are plotted on the profile sheet, which has instructions on how to place the child into one of the five diagnostic clusters: difficult, intermediate high and low, slow-to-warm-up and easy. The three diagnostic clusters of the N.Y.L.S. were retained approximately as defined by them, all others being designated as intermediate high or low. This rating process takes about 15 min.

RESULTS

Table 1 presents the means and standard deviations for each of the nine categories for the 350 subjects, as well as reliabilities for each category. Two indices of reliability are reported. The first, test–retest reliability ($N = 53$), ranged from 0·67 to 0·94 with a median of 0·81. Total score test–retest reliability was 0·89. The second measure, internal consistency reliability, is an index of the homogeneity of the items with each category ($N = 350$). The K–R 20 formula was used, yielding the average of all possible split-half reliabilities. Results for the present instrument showed that these alpha coefficients ranged from 0·47 to 0·80 with a median of 0·70.

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*B.S.Q. availability. A sample copy of the B.S.Q., scoring sheet, and profile sheet may be obtained by writing to Dr. Carey at 319 W. Front St., Media, PA 19063, U.S.A. Please enclose a check for $5.00 (U.S.) to cover expenses. In the U.K., copies may be obtained through the British Lending Library, Boston Spa, Wetherby, West Yorkshire LS23 7 BQ. Request Supplementary Publication No. SUP 90028.

Internal consistency for the total instrument was 0·84. Category homogeneities were lowest for threshold (0·47) and rhythmicity (0·48). The remaining coefficients were 0·60 and above.

TABLE 1. MEANS, STANDARD DEVIATIONS, AND RELIABILITIES FOR TEMPERAMENT CATEGORIES IN B.S.Q. (N = 350)

Category	Mean	Standard Deviation	Alpha r*	Retest r†
1. Activity	3·56	0·750	0·76	0·93
2. Rhythmicity	2·75	0·677	0·48	0·80
3. Approach	2·99	0·942	0·80	0·94
4. Adaptability	2·55	0·717	0·72	0·85
5. Intensity	4·52	0·653	0·71	0·75
6. Mood	3·31	0·683	0·66	0·87
7. Persistence	2·87	0·688	0·60	0·70
8. Distractibility	3·89	0·806	0·70	0·82
9. Threshold	3·98	0·603	0·47	0·67
Total			0·84	0·89

*Alpha reliability is an index of the homogeneity of items within a scale.
†One month test–retest reliability (N = 53).

Correlations between age and sex and category scores showed that older children were rated as more rhythmic ($r = -0{\cdot}18$; $P < 0{\cdot}01$) and less distractible ($r = -0{\cdot}19$; $P < 0{\cdot}01$) than younger ones. Males were found to be more rhythmic than females ($r = -0{\cdot}13$; $P < 0{\cdot}01$) and more active ($r = 0{\cdot}12$; $P < 0{\cdot}05$). Females were seen as more distractible ($r = -0{\cdot}11$; $P < 0{\cdot}05$) and had lower sensory thresholds ($r = -0{\cdot}11$; $P < 0{\cdot}05$).

In order to determine the prevalence of the N.Y.L.S. diagnostic groups within the standardization sample, a person cluster analysis was performed. Ten individuals with profile patterns corresponding to the theoretical definitions of easy, slow-to-warm-up and difficult were randomly selected. These 30 provided a working definition of the clusters, to which the BCTRY program (Tryon and Bailey, 1970) assigned as many as possible of the remainder of the sample. Scores for activity level, rhythmicity, approach–withdrawal, adaptability, intensity and mood were included in the present analysis (Table 2).

TABLE 2. MEANS AND HOMOGENEITIES FOR PERSON CLUSTER ANALYSIS OF B.S.Q.

Category	Activity	Rhythmicity	Approach	Adaptibility	Intensity	Mood
			Means			
Cluster						
Easy	49·63	46·09*	43·88*	43·30*	45·76*	43·44*
Slow-to-warm-up	42·47*	49·41	59·07*	53·49*	45·86*	54·36*
Difficult	55·41*	55·29*	55·32*	61·40*	55·29*	57·27*
			Homogeneities			
Easy	0·73†	0·77†	0·74†	0·80†	0·66†	0·72†
Slow-to-warm-up	0·80†	0·56	0·78†	0·80†	0·64†	0·68†
Difficult	0·78†	0·64†	0·59†	0·65†	0·76†	0·71†

Means and standard deviations in Table 1 have been converted to 50 ± 10 to facilitate interpretation of profile form.

*Indicates significant departure from mean of 50·00 ($P < 0{\cdot}05$).

†Indicates significant homogeneity or profile "tightness" ($P < 0{\cdot}05$).

Results of this analysis showed that easy children were average in activity, rhythmic, approaching, adaptable, mild in intensity and positive in mood. In addition, homogeneities or tightness of the profile patterns compared to the total sample were significant for each of the dimensions. Slow-to-warm-up children were low in activity, average in rhythmicity, withdrawing, nonadaptable, mild in intensity and negative in mood. Homogeneities again were significant for each of the categories. Difficult children were high in activity, arrhythmic, withdrawing, nonadaptable, intense and negative in mood. Homogeneities were significant for all dimensions. These categorizations with the exception of activity for difficult children are of the direction and magnitude predicted by Thomas *et al.* (1968) for cluster assignment. Of the children in the sample, 67·7% were included in one of the three clusters, compared to 65% in the N.Y.L.S.

Rating of all 350 subjects by this method produced the following distribution: difficult 65 (18·6%), slow-to-warm-up 56 (16%), intermediate 113 (32·3%) and easy 116 (33·1%). There were no significant sex differences in representation in the various clusters: difficult—male 30 (46·2%), female 35 (53·8%), slow-to-warm-up—male 26 (46.4%), female 30 (53·5%), and easy—male 55 (47·4%), female 61 (52·6%).

The clinical method of scoring, on the other hand, defines diagnostic clusters in terms of means and standard deviations (see profile sheet). Using this technique the population sample is divided into difficult 44 (12·6%), slow-to-warm-up 20 (5·7%), intermediate high 45 (12·9%), intermediate low 121 (34.5%) and easy 120 (34·3%).

Evidence for the external validity of the B.S.Q. has been reported more extensively elsewhere (Carey *et al.*, 1977). In a study of 51 5–7 year old children, low scores in the adaptability category of this questionnaire correlated significantly ($r = 0{\cdot}31$, $P < 0{\cdot}05$) with difficulty in problem solving tasks (Matching Familiar Figures Test). Adaptability also correlated significantly ($r = 0{\cdot}35$, $P < 0{\cdot}01$) with teacher judgements of school adjustment as measured by the Bommarito Socialization Scale. B.S.Q. nonpersistence was related to the number of errors on the Matching Familiar Figures Test ($r = 0{\cdot}29$, $P < 0{\cdot}05$).

Two recently completed analyses of temperament in 187 children studied longitudinally from 6 months to 3–7 years demonstrated significant stability in most of the categories (McDevitt, 1976) and significant stability on individual temperament cluster diagnoses (Carey and McDevitt, in press). In the first study, significant stability ($P < 0{\cdot}05$) was observed for seven of the nine characteristics with 97 children aged 3–5 years. Activity, rhythmicity, approach–withdrawal, adaptability, threshold, intensity and mood showed positive correlations with infant temperament ratings. Infant ratings showed a lesser degree of consistency with B.S.Q. data in 90 children 5–7 years of age. Only activity remained stable at the level of correlation observed at 3–5 years; persistence was marginally stable.

In the second study, the same longitudinal subjects were classified into easy, intermediate low, slow-to-warm-up, intermediate high and difficult groups for infant and early childhood ratings. Results showed that a disproportionate number of individuals rated difficult or intermediate high in infancy remained in these categories at 3–7 years ($\chi^2 = 10{\cdot}93$; $P < 0{\cdot}01$). While shifts to adjacent groups (e.g. from easy to intermediate low) were relatively common, extreme changes in temperament (e.g. from difficult to easy and vice versa) were observed in only eight of the 187 children studied.

DISCUSSION

It appears that the B.S.Q. has fulfilled many of the requirements of a satisfactory psychological test instrument.

(1) Test–retest reliability of 0·89 is of a high order and compares well with the 0·84 for Carey's infant temperament questionnaire (McDevitt and Carey, 1976) and the 0·82 for Buss and Plomin's EASI-III (1975) with over twice as many subjects.

(2) The internal consistency of 0·60 or greater for seven of the nine categories is generally acceptable. Item homogeneity, when present, provides statistical evidence that the items within a category are measuring the same trait. Further evidence for the desirability of item homogeneity comes from a recent study with Carey's infant temperament scale. Pedersen *et al.* (1976) showed that the correlation between ratings by the mother and father of the same child was higher for temperament categories that were more internally consistent.

The relatively low homogeneity observed here for rhythmicity and threshold could be explained in two possible ways. The variety of functions included within these two categories may be more diverse and unrelated than in the others. On the other hand, it may be that biological rhythmicity and sensory threshold are more unevenly affected by environmental interaction or cognitive suppression than the other characteristics such as activity or intensity.

(3) The results of the cluster analysis lend credence to the assumption that the B.S.Q. measures the same temperament traits described by Thomas *et al.* (1963). Profile scores which correspond to the easy, slow-to-warm-up and difficult temperament types were observed with about the same frequency as in the N.Y.L.S. The only minor exception to the original cluster profiles was for the difficult children who tended to be high in activity. In the N.Y.L.S. difficult children showed no consistent pattern for activity. As in the N.Y.L.S. there were no sex differences in the number of children identified as members of each temperament type. These findings are supportive of the construct validity of the B.S.Q. in measuring the N.Y.L.S. dimensions.

(4) The preliminary data on external validity of the B.S.Q. appear to be consistent with previous N.Y.L.S. research. The finding of a correlation between adaptability and success in problem solving is in agreement with the prior findings of Chess *et al.* (1976) that low adaptability is related to lesser scholastic achievement. This relationship between behavioral style and problem-solving ability raises the question of whether temperament is related to intelligence. We know of no data on this point at present. While adaptability and persistence may covary with I.Q., it also seems reasonable that behavioral style may affect how efficiently children of similar intelligence process information in cognitive tasks.

The pattern of longitudinal stability that emerged was also similar. Thomas and Chess (1977) found that activity level and adaptability were more stable than the other characteristics over this age range. Our data are in agreement, but add other variables (e.g. threshold and intensity) to this list. Distractibility and persistence showed no stability over this period, a finding shared with the N.Y.L.S. Stability of cluster membership over time, found with the B.S.Q., had not been previously established by quantitative analysis. The longitudinal data can be interpreted as supporting the external validity of the B.S.Q. since the infant temperament determinations were by a different instrument 2½–6½ years earlier.

To establish the external validity of each of the questionnaire items one would have to demonstrate a high degree of agreement between questionnaire results and numerous independent observations of the children in the various situations involved. There exists no standardized technique by which an outside observer can collect data more accurately than the parents on such diverse behaviors as acceptance of new foods, regularity of time of awakening, or complaints to mother on getting home from school. Thomas *et al.* (1963) found that clear, simple questions about contemporaneous events yielded parental responses of a high degree of validity.

Clinicians, who generally must depend more on interview material than their own observations for behavioral data, can regard the B.S.Q. as a reliable method for collecting and rating the mother's observations. Later work by us and other researchers will clarify which categories or which individual raters are subject to discrepancies with the findings of independent observers.

The clinician using the B.S.Q. will undoubtedly want to obtain additional information on his patient from interviews and observations in order to clarify the findings and complete his understanding of the parent–child interaction. Results of the B.S.Q. are properly given back to parents in general descriptive terms with avoidance of the use of labels that may be misunderstood.

The usefulness of the B.S.Q. has yet to be fully explored. Several possibilities seem plausible at this time: (1) a temperament profile could be determined by the clinician as a basis for advice to parents on child rearing practices, as with the infant temperament questionnaire (Carey, 1972b). (2) For clinical evaluation of problems of behavior or learning, more objective and organized temperament data than the usual general impressions should be a valuable improvement. (3) There could be some clarification in research on the relationships between temperament and psychiatric, psychosomatic and educational problems. (4) Research on the theoretical organization of temperament in childhood should be enhanced.

The finding of few significant age by category correlations provides empirical evidence that the items comprising the B.S.Q. are not age dependent. Younger children are no more likely to be scored as difficult than the older ones because of developmental changes in behavioral competence. The two significant correlations that were observed were quite small, predicting less than 4% of the variance. Sex by category correlations were similarly weak. For scoring purposes we recommend that an adequate estimate of the child's temperament can be had by using the means for the whole study group.

However, some minor issues do remain about the standization sample used and the diagnostic cluster definitions.

Since the initial sample used to standardize the B.S.Q. is predominantly American middle class, further experience with the form will be necessary to determine whether the norms established would also apply to children in a lower class population or in other subcultures or cultures. The means and standard deviations reported in Table 1, therefore, should be considered tentative population norms. We are not aware of any evidence to date that temperament varies with social class. But the experience of children in markedly different cultural settings may make items included in the B.S.Q. less representative of their actual temperament.

We have followed the example of Thomas *et al.* (1963) in defining the difficult child and the other diagnostic clusters generally as they did. Although the five characteristics used to determine difficult temperament are clearly appropriate for daytime reactions in the first year or so of life, they seem to apply less to night-time behavior in infancy (Carey, 1974) and after the first year some of the other categories may come to equal or surpass them in significance for parent–child interaction. While rhythmicity probably diminishes in importance by the beginning of school, activity, persistence and distractibility have probably increased. It seems likely that a revised definition of difficult temperament will evolve for the 3–7 year old child or that more meaningful groupings of the characteristics will become evident.

Finally, the reader should be aware that Thomas and Chess in New York began work independently on a questionnaire very similar to this one at about the same time. Their project is being reported elsewhere (Thomas and Chess, 1977).

SUMMARY

This paper reports the initial development of the Behavioral Style Questionnaire (B.S.Q.) for determining temperamental characteristics in 3–7 year old children. The 100 item questionnaire was based on the conceptualization of Thomas *et al.* (1963) and standardized on 350 children in a pediatric practice. It can be completed by the parent in about 25 min and scored in about 15 min. Test–retest reliability and alpha reliability are both satisfactory, 0·89 and 0·84, respectively. Preliminary evidence of construct and external validity is presented. The instrument should provide more objective and organized temperament data for research and clinical purposes.

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RECOGNITION OF FACES: AN APPROACH TO THE STUDY OF AUTISM

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INTRODUCTION

ANYONE meeting an autistic child for the first time is immediately struck by his abnormal social behaviour. It was this gross and sustained impairment of emotional relationships with others, particularly peers, which first led Kanner (1943) to define the syndrome in terms of a "disturbance of affective contact". However, the full classic picture of aloofness and detachment seems more marked in the younger autistic child of less than about 5 years of age (Wing, 1971). Such a child may behave as if others do not exist, unless approached in a certain way by someone to whom he readily responds. There is also a frequently noted tendency for him to show great difficulty in playing with other children, or in any way interacting with them on a social level. From birth the autistic child may have been described as a totally unresponsive child who, for example, did not accommodate his position to that of the mother when picked up (Wing, 1976a).

This early aloofness more often than not dissipates as the child becomes older. Follow-up studies have stressed the change that this fundamental aspect of the child's relation to others can undergo (Lockyer and Rutter, 1969; Rutter, Greenfeld and Lockyer, 1967; Rutter and Lockyer, 1967; Rutter, 1970). However, not all autistic children exhibit a dramatic change in their social relations, and a few are noted to go through periods of increased withdrawal. One should also be careful not to interpret "remittance of withdrawal" as the onset of normal social behaviour. The vast majority of even the most friendly autistic children are often still inadequately equipped when trying to relate to others, being essentially naive to the "dos" and "do nots" of accepted social interaction.

Perhaps it would be useful in this context to consider one underlying aspect of social behaviour: the way in which we normally perceive others. In general it would appear that one's manner of perceiving others is related to the degree to which the various facial features of other people are helpful in identifying them (Ellis, 1975). In their study of the ability of $4\frac{1}{2}$ to $10\frac{1}{2}$ year old children to recognize peers from isolated facial features, Goldstein and Mackenberg (1966) found that all the children tended to find the upper half of the face more helpful to identification than the lower half. This finding seems to be supported by the results of many other studies, and is thought to be most probably due to the use made by normal people

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of the eye area as an important source of meaning in facial expression, together with the probably related convention of meeting another's gaze when communicating (Ellis, 1975; Ekman, 1973).

The younger autistic child, on the other hand, is often said to "avoid" eye contact. According to Hutt and Hutt and colleagues (Hutt and Ounsted, 1966; Hutt and Hutt, 1970) this "gaze avoidance" is due to a high level of arousal in the autistic child. Social interaction, and especially eye contact, is avoided to prevent any further arousal above the already abnormally high baseline. It seems implicit in such a theory that the autistic child has a sufficient understanding of non-verbal communication to find facial expression arousing enough to warrant the avoidance of another's gaze. However, gaze avoidance may only be one aspect of a generally low fixation time on all objects in the environment (Hermelin and O'Connor, 1967). Further, if autistic children do find eye contact too arousing, they would presumably spend less time inspecting a face with its eyes open than one with its eyes closed, which was not found to be the case (Hermelin and O'Connor, 1970). Hermelin and O'Connor also found that when they specifically asked an autistic child to look at a particular face, gaze avoidance did not occur. Moreover, it is noteworthy that although gaze avoidance is often attributed to the younger autistic child, "over extended gaze contact" is sometimes attributed to the older autistic child (Wing, 1976b). If it is suggested that eye contact is highly arousing to the autistic child, then it is clear that this observation cannot be accounted for by an over-arousal theory such as that proposed by Hutt and Hutt and colleagues. Perhaps a more rewarding approach may be found in the consideration of the development of social responses in the normal child.

The origins of social attachment in normal children cannot be regarded solely as the direct result of interaction with the mother at an early age (Schaffer and Emerson, 1964a). In their discussion of the autistic child's responses to people, Hermelin and O'Connor (1970) point out that the earliest social responses of normal children are elicited through distal receptors such as the eyes or ears. The normal child is found to have a preference for human faces over other visual stimuli (Fantz, 1961; Kagan and Lewis, 1964) and smiling is reported to be most effectively stimulated by the sight of a human face, or the sound of a human voice (Wolff, 1963). They then note that these distal receptors did not play such a dominant role in the sensory organization in autistic children as in normal control subjects. Hermelin and O'Connor conclude that an absence of attachment to people could be regarded as only one instance of a general inability to process stimuli adequately. A hypothesis which connects social unresponsiveness in the autistic child with a failure to process some incoming sensory information adequately does seem in better agreement with the findings to date than one that implicates an abnormally high arousal level or one that is primarily concerned with mother–child interaction (e.g. Tinbergen and Tinbergen, 1972).

Noting the possibility that a dysfunction in the processing of sensory input may underly the autistic child's abnormal behaviour and that this behaviour changes with age, the following experiment was carried out in order to delineate what features of the human face were most relevant to the autistic child's perception of others at two stages in his development. To this end, two age groups of autistic, normal and subnormal subjects were tested for their ability to recognize isolated facial features of known peers from photographs of their faces alone. Additionally, bearing in mind that the autistic child may treat the face more as a "pure pattern" than as a social stimulus, a condition was included in which the subject had to identify peers from inverted photographs. It appears that due to the social aspects of face perception, a normal subject's recognition ability is greatly hindered by the inversion of a face compared to his ability to recognize other inverted stimuli (Ellis, 1975) and this might not be the case to the same extent for autistic children. Peers were chosen for subjects following the observation that autistic children show a more marked indifference to them than to adults and also noting that previous experiments have tended to use adults in studies of autistic children's sociability, leaving the perception of and reaction to peers a relatively unexplored aspect.

SUBJECTS

Twenty autistic children acted as subjects, all of whom were attending one of two special schools and had been diagnosed by experienced psychiatrists. Each of these children had suffered from autism, as defined by Rutter (1971), since before 2 years of age. Their symptoms included ritualistic and stereotypic behaviour, delayed speech development, aloofness and an insistence on sameness. This autistic sample, composed of 4 girls and 16 boys, was divided equally into an "older" and a "younger" group according to their chronological age. Table 1 gives details of all the subjects used.

Two groups of 10 normal children acted as controls and were matched with the C.A. of the autistic children. A further 2 groups of 10 normal children acted as controls according to the M.A. of the autistic children. In addition, 2 groups of 10 subnormal children were chosen to match both the C.A. and the I.Q. of the 2 autistic groups. All subnormal children attended a school for the educationally subnormal and were free from autistic symptoms.

It was necessary that the autistic children should have sufficient language ability to be able to comprehend, and respond to, the requirements of the various tasks. This set an unavoidable lower limit on their C.A., as no child under 8 years of age had the required verbal ability. No child who had any unduly obvious distinguishing features (such as scars, glasses, etc.), or who had any known defect of vision was included.

MATERIAL

The stimuli for each group were black and white photographs of the faces of the members of that group, each measuring 14 × 10 cm. All signs of clothing were excluded together with any distinguishing features in the background that might have aided or confused recognition. An attempt was made to have all the children in a natural pose, which in almost all cases was fairly expressionless with mouth closed. The same lighting conditions, photographic equipment and processing procedures were used for each photograph to ensure a good match of tone, sharpness and contrast. It was decided that black and white photographs should be used, as recognition of them is reported to be in no way inferior to that of colour photographs (Laughery *et al.*, 1971) and colour photographs were thought to involve insurmountable difficulties in the matching of skin tones, etc. Each photograph was large enough for isolated features to be readily distinguishable without loss of clarity and detail. In order to present isolated features and areas of the faces, cardboard masks were prepared that could be placed over the photograph during presentation to allow only specific facial areas to be viewed. A stop watch was used to record the response times of each subject.

PROCEDURE

Each child was tested on his own in undistracting surroundings. All 10 photographs of the members of his group (i.e. of the 9 peers and of himself), with all the masking conditions, were shown to each subject. There were 7 "masks" in all and one condition in which the face was shown upside-down. A schematic representation of these masking conditions is shown in Fig. 1.

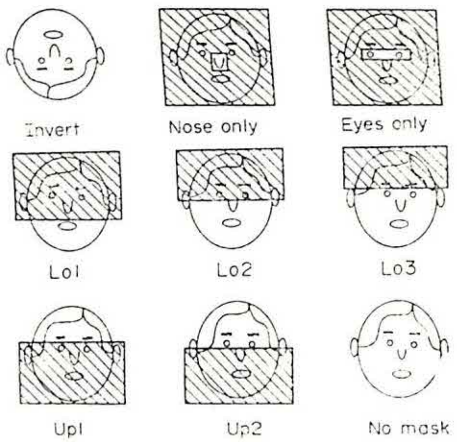

FIG. 1. Masking conditions in order of presentation.

The subject was set at ease by being told that he was to see "some pictures of the other children in your class/school" and that the task was "a sort of game." in which he was told "let's see if you can tell me whose picture I'm going to show to you". Additionally, each subject was told that he should have no hesitation in saying if he didn't know, as the experimenter quite understood that some might be a little difficult. The child, however, was encouraged to "have a guess" whenever possible. Subjects were kept fully informed as to how much of the face they could expect to see at any one time to avoid the possibility of their delaying a response until more was revealed.

A consistent order of presentation was used, to ensure that no subject gained any advantage to be had from differences in presentation order and that as little learning as possible could occur of the particular pictures that would aid recognition. To this end, each of the 10 photographs were first shown inverted to the subject, as it has been found that prior experience of a face in a different mode can greatly affect its recognition when inverted (Goldstein, 1975). When all of the faces had been seen in the inverted condition, the subject was then shown just the noses of all the faces, followed by just the eyes. Next the subject was allowed to see the mouth and chin only (i.e. Lo1; see Fig. 1 for all references to the masking conditions) of one of the 10 photographs. When he had made his guess the card was moved a little to reveal the nose area as well (Lo2). Following his next guess, or reaffirmation of the face's identity, the eyes were revealed by a further move of the card (Lo3). The "lower half" of the face of the next photograph was then shown in a similar way; and so on until all 10 photographs had been seen in all of these three conditions (i.e. Lo1, Lo2, Lo3). The "upper half" of each face was revealed next in two stages: first just the hair and forehead were shown (Up1) and then, following the subject's guess, the card was moved down to reveal the eye area as well (Up2). This procedure was repeated for each of the 10 faces in turn. It was impressed on the subject each time the card was moved that he did not *have* to change his mind—it did not necessarily mean that his guess had been incorrect. No feedback whatsoever was given as to the subject's number of errors.

Finally, the subject was shown all the photographs in the normal upright mode, without any masking, to ensure that he knew the identity of each face. If the subject failed to recognize any face in this final mode then his previous errors on that face were discounted. With each change from one "block" of masks (e.g. the inverted mode was the first "block" and the Up1 and Up2 conditions formed the last but one "block") to another the photographs were thoroughly randomized.

No time limit was set for the presentation of each stimulus, but a record was kept of the response times of each subject, who was told to guess as soon as he felt fairly certain whose face was being presented.

RESULTS

An analysis of variance was performed on the per cent error scores of the various groups (the means are given in Table 2) to compare the performance by the different types of children in the different conditions, across the two age groups. Significant main effects of age, conditions and type were obtained, together with significant interactions of conditions × type and of conditions × type × age. Because the sources of the conditions × type interaction are of particular interest to this study and noting that a significant main effect of age was obtained, two further analyses of variance were computed: one to compare the younger autistic group's results with those of their controls; and a second to compare the performance of the older autistic group with that of their controls. Significant main effects of type and conditions were obtained in both cases, along with a significant interaction of type × condition in each case. The results of these three analyses are given in Table 3.

TABLE 3. ANALYSIS OF VARIANCE ON THE MEAN PER CENT ERRORS

(i)	Comparing types of child across two age levels					
	Source	d.f.	SS	MS	F	*P*
	Age	1	6722.00	6722.00	1281·27	0·023
	Type	3	43687·19	14562·39	5.41	0·001
	Conditions	7	338205·56	48315·08	216·13	0·001
	A × T	3	7287·13	2429·04	11·71	0·001
	C × T	21	49415·63	2353·13	10·53	0·001
	C × T × A	21	10707·88	509·90	2·28	0·001
(ii)	Older autistics and their controls					
	Source	d.f.	SS	MS	F	*P*
	Type	3	40949·19	13649·73	12·21	0·001
	Conditions	7	178881·50	25554·50	126·13	0·001
	T × C	21	22349·00	1064·24	5·25	0·001
(iii)	Younger autistics and their controls					
	Source	df	SS	MS	F	*P*
	Type	3	8444·06	2814·69	3·01	0·032
	Conditions	7	121162·81	20193·80	78·15	0·001
	T × C	21	43819·00	2434·39	9·42	0·001

The main results can be summarized as follows:

1. On nearly all the masking conditions there were no significant differences

TABLE 1. SUBJECTS

	"Younger" groups				"Older" groups			
	Autistic	Normal (M.A.)	Normal (C.A.)	Subnormal	Autistic	Normal (M.A.)	Normal (C.A.)	Subnormal
Mean chronological age (yr)	9·8	5·62	9·64	9·75	14·1	8·1	13·57	13·7
Standard deviation (yr)	1	0·23	1·51	0·98	1·1	0·66	0·4	1·27
Mean full I.Q.*	60·3			61·3	63·0			60·2
Standard deviation	15·62			5·36	14·22			7·71
Mean performance I.Q.*	73·5			62·4	78·0			63·1
Standard deviation	15·25			8·06	18·30			7·87

*All I.Q. measures are from a complete administration of the WISC. The I.Q.s of the normal children were not taken, but all children were chosen as "average performers" by their teachers.

TABLE 2. TABLE OF THE MEAN PER CENT ERRORS FOR EACH GROUP IN EACH CONDITION

Groups* / Masks†	Older autistic	Younger autistic	Older normal (C.A.)	Older normal (M.A.)	Older subnormal	Younger normal (C.A.)	Younger normal (M.A.)	Younger subnormal
Up 1	15·61	60·69	24·40	38·40	47·70	37·41	34·98	36·90
Up 2	8·28	29·42	7·20	21·00	15·20	15·52	23·32	10·60
Lo 1	26·52	35·19	68·90	77·70	64·00	71·04	85·00	74·00
Lo 2	11·06	21·97	43·70	71·90	46·90	56·59	78·04	64·30
Lo 3	4·31	7·64	20·30	35·50	14·60	25·96	35·82	21·30
Nose	74·60	77·63	80·89	90·60	92·30	81·45	90·00	93·50
Eyes	64·32	89·34	60·60	80·29	86·40	66·79	86·12	83·60
Invert	28·33	48·18	52·40	55·70	70·30	53·08	56·10	79·70

*For full details of the groups see "Subjects" section and Table 1.
†For full details of the various masking conditions used see Fig. 1.

between the mean percentage errors of the normal and subnormal groups. The trend for all these subjects was concordant with the results of previous experiments (e.g. Goldstein and Mackenberg, 1966) and indicated that they found the features of the upper half of the face generally easier to recognize than those of the lower half of the face.

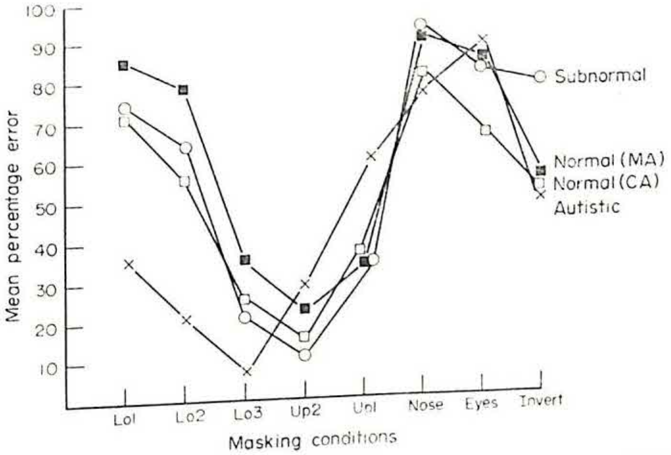

FIG. 2. Mean per cent error in each condition for the younger autistic children and their controls.

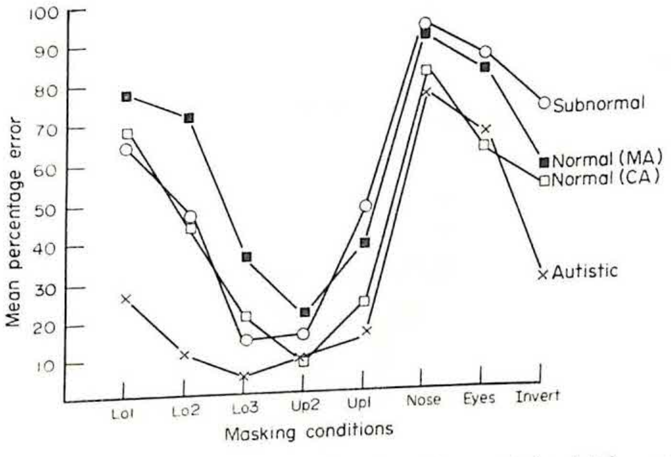

FIG. 3. Mean per cent error in each condition for the older autistic children and their controls.

2. In contrast to their normal and subnormal controls, the younger autistic children were significantly better on the lower half of the face than on the upper half.

3. The older autistic children's mean per cent errors were not found to differ from those of the younger autistic children on the lower half of the face (i.e. on Lo1, Lo2 and Lo3). Unlike the younger autistic children, though, they also did not differ significantly from their normal control group matched for C.A. on the upper

half of the face (i.e. Up1 and Up2). In fact their pooled mean percentage error for Up1 and Up2 did not differ significantly from that of Lo1, Lo2 and Lo3.

4. The remaining major finding was that while the younger autistic children were not found to differ significantly from their normal controls on their mean percentage error for the inverted mode the older autistic children were significantly better here than their controls. The mean error for the younger autistic children was also significantly higher than that of the older autistic children in this mode.

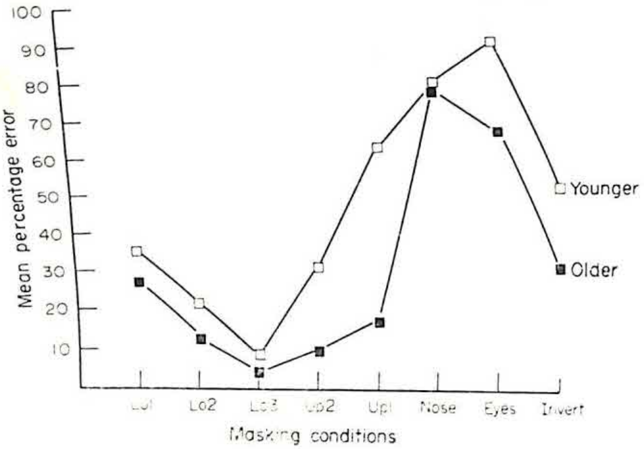

FIG. 4. Mean per cent error in each condition: older vs younger autistic children.

Selected comparisons were made, using Scheffé's procedure (Winer, 1971) to investigate the sources of the previous interaction terms.

A significant interaction was obtained which indicated that the autistic subjects as a whole gave different results on the upper and lower halves of the face than did the other types of child (the difference between Lo1, Lo2, Lo3 and Up1, Up2 differed between types $F_{77.2} = 89{\cdot}87$, $P < 0{\cdot}01$). A similar comparison was computed to explore the sources of the conditions × type × age interaction and it was found that for the autistic children vs the other types of child the difference between the lower masking condition (Lo1, Lo2 and Lo3) and the upper masking conditions (Up 1 and Up2) differed for the two age groups ($F_{77.2} = 22{\cdot}65$, $P < 0{\cdot}05$). This contrast accounted for 51 per cent of the sum of squares of the conditions × type × age interaction term. The source of this was investigated using the Duncan's Range statistic (see: Winer, 1971; McGuigan, 1968) and it was found to be due to the autistic subjects being the only type of children who differed between age levels in their mean error scores for the upper and lower halves of the face (the older were better than the younger on both the Up1 and Up2 conditions; df = 36, $P < 0{\cdot}05$ in each case).

1. *Within group comparisons*

The sources of the type × conditions interactions at the two age levels were investigated using the Scheffé procedure. Further analysis of them was carried out using the Duncan's Range statistic to compare the mean error scores across conditions within a group.

(i) *The younger subjects.* A comparison of the upper and lower parts of the face where the eyes were not present (i.e. Lo1 vs Up1 and Lo2 vs Up1), for the four different types of child revealed a significant interaction in each case ($F_{3,36} = 67{\cdot}50$ and $F_{3,36} = 73{\cdot}40$ respectively, $P < 0{\cdot}01$). Within group comparisons showed that whereas the control groups all had significantly lower mean error scores on the Up1 than on either the Lo1 or Lo2 conditions (df $= 62$, $P < 0{\cdot}05$ in each case), for the younger autistic children the reverse was true to a significant degree (df $= 62$, $P < 0{\cdot}01$ in both cases). A comparison of the contributions of the eyes to the recognition of the lower face (i.e. Lo2 vs Lo3) for the different types of child produced an interaction which was just significant at the $P = 0{\cdot}05$ level ($F_{3,36} = 9{\cdot}11$). Within group comparisons revealed that whereas the presence of the eyes greatly reduced the mean error scores of each of the control groups (df $= 62$, $P < 0{\cdot}01$), the difference between the Lo2 and Lo3 conditions for the younger autistic children just failed to reach significance at the $P = 0{\cdot}05$ level; although a clear trend was in evidence for the presence of the eyes to reduce recognition errors slightly.

A similar comparison of the effect of the contribution of the eyes to the recognition of the upper face (i.e. Up1 vs Up2) between the different younger groups did not produce a significant interaction. The within group comparisons showed that all the groups' mean error scores for the upper face were significantly reduced when the eyes were available (df$= 62$, $P < 0{\cdot}01$). It is noteworthy, though, that the younger autistic children's recognition of the upper regions where the eyes were present (Up2) was still significantly inferior to that of the lower area where the eyes were present (Lo3) (df $= 36$, $P < 0{\cdot}05$). No such significant difference was found for the other groups, although a contrasting trend was evident for the errors on the Lo3 condition to be greater than on the Up2 one. The interaction here was significant at $P < 0{\cdot}01$ ($F_{3,36} = 16{\cdot}40$).

(ii) *The older subjects.* In general the older control groups had a performance on all the conditions that did not differ significantly from that of the younger control groups. In each case, again, the presence of the eyes significantly reduced the mean error scores (df $= 62$, $P < 0{\cdot}05$ in all cases). The interaction terms for the older autistic subjects vs the other types of child for the Lo1 vs Up1 and the Lo2 vs Lo3 conditions were both significant at $P < 0{\cdot}05$ ($F_{3,36} = 9{\cdot}40$ and $F_{3,36} = 12{\cdot}30$, respectively). However, the interaction terms for the Up1 vs Up2 and the Up2 vs Lo3 conditions were each found not to be significant. Within group comparisons showed that whereas all the control groups' mean error scores were significantly better for the upper than the lower portions where the eyes were not present (i.e. Up1 and Lo1), the older autistic children did not differ on these conditions. Additionally, whereas the availability of the eyes for the lower face significantly reduced the errors of the control groups (i.e.Lo 2 vs Lo3, df $= 62$, $P < 0{\cdot}01$ in each case), again no such difference was obtained for the older autistic children. In fact the older autistic children's knowledge of the face seemed to be fairly homogeneous, with only the Lo1 vs Lo3 comparison reaching significance (df $= 62$, $P < 0{\cdot}05$). This even knowledge of the face also extended to the invert mode, as errors here were only found to differ significantly from those on the Lo3 condition (df $= 62$, $P < 0{\cdot}05$).

2. *Between group comparisons*

Both autistic groups were found to have lower errors on the Lo1 and Lo2 conditions than did their controls (df $= 36$, $P < 0{\cdot}01$ in all cases). However, whereas the younger autistic children were significantly worse than their controls on the Up1 condition (df $= 36$, $P < 0{\cdot}01$ in all cases), they failed to differ from them on the Up2 and invert conditions. They were, however, found to be significantly better than their normal control groups on Lo3 (df $= 36$, $P < 0{\cdot}01$ in both cases).

The older autistic children differed from the younger ones in that they were not found to differ, in their ability to recognize the faces under the Lo3 and Up2 conditions, from their normal control subjects. A comparison across the groups on the Up1 condition revealed that the older autistic children were equally good as their normal controls matched for C.A. on the recognition of the forehead and hairline. Finally, the older autistic children were significantly better than all their controls at recognizing the inverted faces (df $= 36$, $P < 0{\cdot}01$).

No significant differences were found between the groups on the "nose only" condition. On the "eyes only" condition the younger autistic children's mean errors were not found to differ from those of their control subjects matched for M.A., but were significantly higher than those of their controls matched for C.A. alone (df $=$ 36, $P < 0{\cdot}05$). In contrast the older autistic children's mean errors on this condition did not differ significantly from any of their controls and were found to be significantly lower than those of the younger autistic children ($P < 0{\cdot}05$, df $= 18$, $t = 2{\cdot}16$). It is possible that mental age is an important factor in this latter case.

The WISC scores for the autistic children were used to test for the possibility of a correlation between I.Q. and performance on the tasks. A Pearson–Bravais product moment coefficient (see McGuigan, 1968) was computed for both the groups' mean percentage error scores vs both full and performance I.Q. No significant correlation was found.

The mean response times attained by each group were not significantly different. It is noted therefore that no group tended to gain any advantage from looking at the stimuli for a longer period.

In all those masking conditions in which the autistic children's mean percentage error was significantly different from those of their normal control subjects, the subnormal subjects were found not to differ from one or both of the normal control groups. Thus one can infer that the deviant results of the autistic children are most likely to be due to their "autism" and not to their "subnormality".

DISCUSSION

Two main questions arise from the results of this experiment. First, why are young autistic children better able to recognize photographs of their peers when shown the lower rather than the upper facial features? Second, why, in contrast to normal and subnormal children, should older autistic children have a more homogeneous knowledge of the entire face, so that they can use the upper as well as the lower features effectively for recognition?

In searching for explanatory hypotheses for these results one should bear in mind that the latter may not reflect a single aspect, but a compound of aspects of autism. Thus one can view these results in the light of both the autistic child's pattern recognition abilities and their possibly deviant attempts to discern the social signals conveyed by the face.

Taking the former point first, one possible explanation for the results obtained by the younger autistic children might be that when the face is regarded simply as a visual pattern, the mouth and eyes areas rank equally as the most easily discriminable areas of the human face. That is, if one did not view the face as a social stimulus, one might find that the area of the face from the mouth downwards is similarly easy to recognize as that from the eyes upwards. Thus by extension of this argument one would expect recognition ability to be at its best where both of these areas were available and at its worst where neither were present. However, this explanation does not seem to offer a clear reason why the older autistic children are almost equally good at recognizing all parts of the face (in particular that area revealed in the Up1 condition). Possibly, though, there may be a ceiling effect due to the very high per cent of correct scores obtained by this group on the Lo3 and Up2 conditions that prevents a clear picture from emerging. Clearly, further data is necessary in order to fully assess this hypothesis.

Turning to a consideration of the social aspects of face perception, the results of this experiment do not seem to support the gaze avoidance theory of Hutt *et al.* (e.g. Hutt and Ounsted, 1966). If the normal subject's superior knowledge of the eye area is the consequence of his continual use of this region as an important source of information about another's inner state, then it would seem logical to infer that active gaze avoidance would lead to a lesser knowledge of the eye area. This was not found to be the case for either of the autistic groups: the younger autistic children's knowledge of the face down to the eye area was not significantly different from that of their control groups and the older autistic children's knowledge of the entire upper face was in no way inferior to that of the normal control children.

On the other hand, in view of the abnormality of the typical young autistic child's social behaviour, it is perhaps hardly surprising that he may have failed to learn either that the eye area is an important source of information about the inner state of another person, or that a social convention exists concerning gaze contact. However, the results suggest that the younger autistic child tends to focus his attention on the mouth area, and one would not expect him to do this unless he had good reason to. A possibly relevant observation reported by Dodd (1977) is that normal subjects, when presented with a spoken communication against a noisy background, tend to rely on any visual cues regarding the content of the communication. Thus one might infer that the younger autistic child may attend to the mouth area because he is trying to compensate for an inability to extract the full meaning from the auditory component of speech. This inability, in turn, may arise from a central cognitive deficit affecting the processing of all auditory stimuli. There is a wealth of evidence to support this contention (Hermelin and O'Connor, 1970).

In general, the autistic child remains impaired in his verbal ability as he grows older. Thus, if the younger autistic child has a tendency to use visual cues from the mouth area in spoken communications, this reliance is still likely to exist in the older autistic child as well; this might be reflected by the older autistic child also posessing a better-than-normal knowledge of the lower facial features. It is frequently noted, on the other hand, that the autistic child tends to become more sociable as he grows older (DeMyer, 1971; Wing, 1976a). Therefore, if it is more "normal" to use the eye area as a primary conveyer of non-verbal communication then it might be expected that the older autistic child may possess at least a rudimentary understanding of this use, even if his ability to read complex meaning into the eye area is deficient. To exemplify this, one can cite an autistic girl who is quoted as having said: "I know people talk with their eyes, but I don't know what they are saying". Sufficient knowledge that the eye area conveys meaning relevant to interpersonal communication, but an inability to decipher this meaning, could lead to the over-extended gaze contact noted by Wing (1976b) and hence to a knowledge of the upper half of the face which could equal that of normal subjects.

The inverted faces were included in this study to see if the autistic children had a tendency to treat the face more as a "pure pattern" than a "social pattern". The rationale behind this was that the social aspects of face perception are strongly implicated as reasons why faces are disproportionately more difficult to recognize when upside-down than are other inverted stimuli (Ellis, 1975). However, whereas the older autistic children's mean per cent error for recognizing upside-down faces was found to be much lower than that of all the other groups, the mean per cent error of the younger autistic children did not differ significantly from that of the other subjects matched for age and I.Q. If one reasons from the above argument, it implies that (only) the older autistic children have a tendency to treat the face more as a pure pattern than do normal subjects, which in its implication of asociality is in conflict with observation.

A modification to the hypothesis why inverted faces are so difficult to recognize might resolve this apparent paradox. The results of this experiment imply that the younger autistic children and their normal controls share a relative disability to identify inverted faces, whereas the older autistic children have a relatively superior recognition ability in this mode. In the "focusing hypothesis" outlined above, one similarity between the younger autistic and normal children is that they both may use a certain portion of the face as a focal centre, whereas the older autistic children do not appear to have a reliance on any specific area for recognition. Thus both the younger autistic and normal children may possess fairly well-defined scanning strategies that centre around this focal area. Inversion of faces, then, changes the relative position of the focal centre and may therefore disrupt the scanning strategy to much the same extent for each of these groups. The older autistic children by contrast, lacking a focal centre, may have a less well defined or more flexible scanning strategy such that their recognition ability would be less affected by transformations of the faces, as this study has found.

To conclude, then, this paper has brought to light significant differences between autistic and normal children in their ability to recognize various facial features. The results appear to favour a hypothesis expressed in terms of the inability of the autistic child to process verbal and non-verbal communications adequately, but may also give some support to a theory which emphasizes "asocial looking" in the autistic child and his reliance on the discriminability of isolated facial features.

SUMMARY

Two age groups of normal, autistic and subnormal children were tested for their ability to recognize the faces of peers from isolated facial features and inverted photographs. The normal and subnormal subjects found the upper regions of the face most helpful for identification, whereas the younger autistic children found the lower features more helpful. The older autistic children showed no specific reliance on any one area, but were found to have error scores as low as those of the younger autistic children on the recognition of lower parts and error scores as low as the controls on recognizing upper portions. The results are discussed and are found to favour a hypothesis in which the autistic child's familiarity with the mouth and/or eye areas is related to a cognitive deficit which affects the processing of both verbal and non-verbal interpersonal communication.

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PSYCHIATRIC REFERRALS FROM SCOTTISH CHILDREN'S HEARINGS: A COMPARATIVE STUDY

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AIM AND INTRODUCTION

This study aims to describe a group of children referred by the Children's Hearings to a child and adolescent psychiatry service, by comparing these children with other children known to the Reporter to the Hearings and with antisocial children referred to the psychiatric service from other sources.

The Children's Act of 1908, applicable both to England and Scotland, established the principle that the courts should seek not only to establish guilt or innocence but should have regard to the needs of the child. Although legislation in the 1930s provided for separate juvenile courts in Scotland, only four were in operation by 1939 and further such developments then ceased. Radical changes in Scotland came about only in the last decade following the publication of the Kilbrandon Report (Scottish Home and Health Department and Scottish Education Department, 1964). Its recommendations were embodied in Part III of the Social Work (Scotland) Act 1968 which was implemented in April 1971. The Kilbrandon Report proposed that the judicial function of proving guilt be separate from the tasks of considering the needs of the child. Such needs were to be the primary consideration and should be dealt with outside the formal court system for all children including those who offend against the law. With certain statutory exceptions it was only where children or parents did not accept the charge or the evidence of need that the case would be referred for proof to a court of law.

In Scotland any person can refer a child who may be in need of compulsory measures of care to an official known as the Reporter. The main grounds for such referrals are: the commital of an offence, truancy, being in moral danger, being beyond parental control or being exposed to circumstances which cause suffering or possible impairment to health. The Reporter has discretion whether or not to call a Children's Hearing. This consists of a meeting between three members of the local Children's Panel (a voluntary body of citizens specially trained for their task) and the child and his parents, for a "full, free and unhurried discussion" (Scottish Home and Health Department and Scottish Education Department, 1964) about the needs of the child. The panel members may decide to discharge the case (if no compulsory measures are thought necessary) or to make a supervision order under a named social worker with or without a condition of residence, e.g. in a

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named residential home or school for an indefinite period. Changes in supervision arrangements including the ending of supervision can be decided only at a Review Hearing.

The Reporter is responsible for obtaining for the Children's Hearing a written social background report about each child and his family. He can also, prior to the hearing or at the request of the panel members, obtain specialist opinions about the child from a number of agencies, one of which is the child and adolescent psychiatric service.

In 1972 the Department of Criminology of the University of Edinburgh undertook a detailed case note survey of the newly implemented Children's Hearing system. This survey was planned to provide data about information available and decisions made for comparison with data previously collected for the Scottish Home and Health Department about juvenile justice under the former court system. Cases were examined for the sequence of decisions made as the child passed through the system. The first part of the survey focused on all cases referred from a city and a county in the first three months of 1972. Later work concerned a similar cohort referred in 1973 and a follow-up of the 1972 cases (Morris and McIsaac, 1978).

The study reported here is based on some of the material collected in this survey but was not originally planned as part of the main work.

SAMPLES AND METHOD

In the first part of their study, Morris and McIsaac (1978) examined the records of all children referred to the Reporters serving two defined areas of Scotland during the first three months of 1972. One area was predominantly rural, the other a city of 450,000 population. In the city 473 children under the age of 16 years were referred during this period. In 44 of these cases information and opinions were sought from child and adolescent psychiatrists for the Children's Hearings. These 44 children (Group R) were aged between 7 and 16 years. They were compared with children in the same age range who were also referred to the Reporter but were not seen by a psychiatrist. Children under 7 years were excluded. Of the remaining 386 children (Group P) almost two-thirds had a full panel hearing following assessment by a social worker; the rest were dealt with by the Reporter on the basis of police and school reports, as well as social work and any other information available to him.

A second comparison was made between the 44 children (Group R) and children, living in the same city, aged between 7 and 16 years who had been referred to the child and adolescent psychiatry service during 1972 by agencies other than the Children's Hearings and who presented with conduct disorders. There were 103 children in this group (Group C).

Nineteen out of the 44 children (43·2 per cent) in Group R (Group Rc) had previously attended the psychiatric service and it was thought possible that this may have stimulated the request for a psychiatric report. For this reason the features of children in Group Rc were independently compared as far as possible with those of children in the three main groups.

All information about the children was extracted from case records. While this was full and reasonably uniform for children in Group R, who all had social work histories and psychiatric records and reports usually supplemented by reports and psychological test results from educational psychologists, this was not so for Groups P and C. Social work histories were available in only two-thirds of children in Group P and information in police and school reports was variable. Information from educational psychologists was rarely available for this group.

Since insufficient children within the specified age range and from the same geographical area were referred to the psychiatric service in the 3 month period under consideration, the search was extended to children referred during the whole of 1972. All suitable case records were scrutinized and all symptoms recorded at intake were listed. Children were diagnosed as conduct disordered if their symptom inventories contained antisocial behaviour of any kind, except that four children who stole only from home and displayed no other antisocial behaviour were excluded. Two psychiatrists (LJW and TJR) selected the conduct disordered children (Group C) from clinic referrals of children in the appropriate age range and area of residence. Ninety-five cases were independently identified as conduct disordered; in eight further cases the diagnosis was made after joint consultation. Unfortunately the psychiatric case notes were very variable so that uniform data could be extracted for only a limited number of comparisons. Only about half the children in Group C had been assessed psychometrically.

For both groups of psychiatrically referred children (R + C) all symptoms recorded in the case notes were extracted and entered on a symptom check list. This method is of course biased by the non-systematic enquiry and recording during clinical interviews. Moreover, in the course of long-term clinic attendances, additional symptoms were recorded and these were often found to be emotional in type although the presenting difficulty had been a conduct disorder. Children referred from the Hearings (R) tended to have more prolonged clinic contact than children referred from other agencies (C). For this reason only symptoms mentioned in the referral letters and during the intake and assessment interviews were extracted from the records.

RESULTS

1. *Sex*

There were 10 girls and 34 boys in Group R (one girl and 18 boys in Group Rc, that is children previously known to the psychiatric service). The comparable numbers for Groups P and C were 90:296 and 31:72, respectively. Although the preponderance of boys was slightly less in conduct disordered children referred to a psychiatric clinic from sources other than the Hearings (Group C), the differences were not significant.

2. *Age*

Comparisons between the three groups indicate that children referred by the Hearings for a psychiatric assessment (Group R) are younger than children not so referred (Group P) and that antisocial children referred to a psychiatric service from other agencies (Group C) are younger still. The mean ages of the groups were as follows: Group R: 12·2 years; (Group Rc: 11·1 years); Group P: 13·1 years; Group C: 10·12 years.

Within Group R the boys were younger than the girls (mean age 11·9 years compared with 13·3 years) resembling Group Rc which consisted almost entirely of boys.

Table 1 shows the age distribution of children in the three groups. As expected, most children referred to the Reporter are of secondary school age or older, while child psychiatric clinic attenders are more often of primary school age. The Children's Hearings tended to refer younger children selectively for psychiatric reports: 1 in 6 of those aged seven to 12; 1 in 10 of those aged 12–15; and 1 in 18 of those aged 15–16.

TABLE 1. AGE DISTRIBUTION

Age (years)	Group P $N = 386$		Group R $N = 44$		Group C $N = 103$	
	No.	%	No.	%	No.	%
$7 < 12$	72	18·7	15	34·1	68	66·0
$12 < 15$	212	54·9	23	52·3	33	32·0
$15 < 16$	102	26·4	6	13·6	2	1·9

Difference between groups P and R significant at 5·0% level.
Difference between groups R and C significant at 0·1% level.

3. *Social class and fathers' employment*

Table 2 presents a comparison of the socio-economic class distribution (using the Registrar General's Classification, 1971) of the principal male member of the household or of the working mother in a single parent household of the three groups of children insofar as this could be determined from the records. There is no significant social class bias on the part of the Hearings to refer children to a psychiatrist although there is a trend towards lesser referral in children from social class IV or V (1 in 12·5, compared with 1 in 9 for children from social classes, I, II and III). Conduct disordered children reaching the clinics from other sources included a higher proportion from social classes I and II. This difference was not significant.

TABLE 2. SOCIAL CLASS DISTRIBUTION

Socio-economic class	Group P $N = 287$ $NK = 99$		Group R (Group Rc) $N = 36$ (15) $NK = 8$ (4)		Group C $N = 88$ $NK = 15$	
	No.	%	No.	%	No.	%
I and II	9	3·1	1 (0)	2·8	12	13·6
III	108	37·6	17 (8)	47·2	37	42·0
IV and V	138	48·1	12 (5)	33·3	32	36·4
0*	32	11·2	6 (2)	16·7	7	8·0

*0—Principal male member of household unemployed for over six months or absent.

All groups of children show an anomalous social class background compared with the general population, with a dearth of children from social classes I and II and an excess from social classes IV and V.

It was of interest that among antisocial children referred to the psychiatric clinics who had fathers or father substitutes living with the families, the proportion with fathers in jobs that regularly took them away from home (e.g. long distance lorry driver, merchant seaman) was significantly greater in Group R than in Group C (Table 3).

TABLE 3. FATHER'S EMPLOYMENT

	Group R* $N = 32$	Group C* $N = 70$
Father regularly sleeps at home	21	60
Father regularly sleeps away from home	11	10

*These numbers include only children whose fathers live with the family.

$P < 0\cdot05$.

4. *The siblings*

Twelve children in Group R had had a sibling as a co-offender but not all of these were also referred for a psychiatric report, Group R containing three pairs of brothers. In addition, four children had a sibling on remand and one an elder brother in Borstal. Unfortunately, we have no comparable information for Group P so that we do not know whether when more than one child is referred to the Reporter a psychiatric referral is more likely.

Children in all three groups came from strikingly large families (mean sizes of sibships: 4·7 for Group P, 5·6 for Group R and 4·3 for Group C), children referred to the psychiatric service from the Children's Panel (Group R) coming from the largest of all. In this group only two children, one boy and one girl, were only children. Group R children already known to the psychiatric service (Rc), although younger than children in Group R, were more like Group R than Group C in this respect (mean size of sibship 5·3). Within Group R, girls tend to come from even bigger families than boys (mean size of sibship for girls 6·0 and for boys 5·1) and, more often than boys to be the oldest or second children (mean birth order for girls was 1·9 and for boys 3·2).

6. *The parents*

Table 4 shows that children referred from Hearings for psychiatric report (Group R) were significantly less often living with natural parents than children not so referred (Group P) or children referred from other sources (Group C).

While the commonest alternative family structure in Group R was that the child lived with his mother and stepfather, the commonest alternative for antisocial children referred to the clinics from other agencies (Group C) was that the child lived with a single mother. In Group R only two out of 44 mothers did not have husbands, or cohabitees, while in Group C nearly one-third of mothers were without a partner. (In Group P the proportion was one sixth.) The differences cannot be accounted for by the younger age of Group C children since children referred from the Hearings but already known to the psychiatric services (Group Rc) contained the highest proportion living with their mother and stepfather and yet were younger than Group R as a whole. When boys and girls in Group R were looked at separately,

TABLE 4. CURRENT PARENT FIGURES

Family composition	P N = 350 (NK = 36)		R(Rc) N = 44 (19)			C N = 103	
	No.	%	No.	%		No.	%
With both own parents	228	65·1	18 (7)	40·9	(36·8)	60	58·3
With mother only	58	16·6	5*(2)	11·4	(10·5)	30	29·1
With mother and stepfather	23	6·6	14 (7)	31·8	(36·8)	5	4·9
With father only	15	4·3	0 (0)	0·0	—	1	1·0
With father and stepmother	6	1·7	0 (0)	0·0	—	4	3·9
With other relatives	18	5·1	4 (0)	9·1	—	0	0·0
In care	2	0·6	3 (3)	6·8	(15·8)	3	2·9

*This includes two families where fathers were in prison on long sentences and one where the father was itinerant.

Difference between Groups P and R with mother and stepfather vs all other situations. $P < 0{\cdot}001$.

Difference between Groups P and R with both own parents vs all other situations. $P < 0{\cdot}01$.

Difference between Groups R and C with mother and stepfather vs all other situations. $P < 0{\cdot}001$.

Difference between Groups R and C with mother only vs all other situations. $P < 0{\cdot}05$.

it was found that the characteristics described applied only to boys and were very striking. While eight out of the 10 girls in Group R lived with both their own parents and none with a stepfather, 24 out of the 34 boys lived in an anomalous family or in care and of these 14 had stepfathers.

Children's Hearings referred no more children living with a single mother for a psychiatrist report than children living with both their own parents. They did, however, refer selectively those children who lived with mothers and stepfathers, with other relatives and especially, those very few children who were in care. The common factor in these groups was replacement of the child's own father by other parent figures. None of the children who had lost their mothers but who lived with their own fathers with or without stepmothers were referred by the hearings.

Among the 32 current father figures in Group R, four were known to the police (one was in prison), 13 had serious drinking problems (12 of these were fathers of delinquent boys), one had attempted suicide and seven altogether had had psychiatric hospital treatment. Two additional fathers were in prison on long term sentences. Altogether 17 had a history of criminality, excessive drinking and/or serious psychiatric disorder. Among the mothers of this group of children five were known to the police and one had attempted suicide. None had had psychiatric hospital treatment although three were treated by their family doctor for "nerves".

6. *The grounds of referral*

These were known for all children referred to the Reporter, that is for Groups R and P. The usual sex differences were found in both groups (Table 5), boys being predominantly referred on account of offences while girls were referred equally often for being in moral danger or beyond parental control. Truancy was a commoner ground for girls than for boys. The only ground of referral associated with a greater likelihood of psychiatric referral, especially in the case of boys, was being beyond parental control.

TABLE 5. GROUNDS OF REFERRAL

Grounds	Boys P $N = 296$ %	Boys R $N = 34$ %	Girls P $N = 90$ %	Girls R $N = 10$ %	Total P $N = 386$ %	Total R $N = 44$ %
Offence	93·2	75·8	24·4	18·2	77·2	61·4
Truancy	2·7	6·0	11·1	9·1	4·7	6·8
In moral danger	—	—	27·8	18·2	6·5	4·6
In circumstances likely to cause suffering or impairment to health	3·0	—	10·0	—	4·6	—
Beyond parental control	0·7	9·1	22·2	45·4	5·7	18·2
Remitted or review hearing	0·3	9·1	4·5	9·1	1·3	9·1

8. *Psychiatric symptoms and educational functioning*

The symptoms recorded at intake for the two psychiatrically referred groups of children (R and C) are presented in Table 6.

TABLE 6. PSYCHIATRIC DISORDERS

Symptom N	R 44		(Rc) (19)	C 103	
Conduct disorders	Total	41	(19)	Total	103
Lying	14		(4)	26	
Stealing	40		(18)	70	
Truanting	17		(11)	20	
Wandering	18		(10)	7	
Temper tantrums	1		(1)	22	
Fire setting	4		(1)	6	
Sexual acting out	1		(0)	2	
Average number of symptoms per child affected		2·3	(2·4)		1·5
Emotional disorders	Total	15	(9)	Total	45
Withdrawal	15		(9)	17	
Unhappiness	6		(5)	8	
Anxiety	8		(6)	8	
Eating disorders	2		(1)	9	
Sleeping disorders	3		(2)	6	
Somatic complaints	0		(0)	8	
Comfort habits	2		(1)	12	
Average number of symptoms per child affected		2·4	(2·7)		1·4
Elimination disorders	Total	3	(1)	Total	21
Enuresis	3		(1)	20	
Encopresis	1		(1)	3	
Average number of symptoms per child affected		1·3	(2·0)		1·1
Overall average number of symptoms per child		3·1	(3·7)		2·4

The higher rates of truanting and wandering and the lower rates of temper tantrums and enuresis may in part reflect the older age of children in Group R

(Wolff, 1967). It is more likely, however, that there are real differences in symptoms between children whose disturbance manifests mainly at home and at school and children who are referred to a psychiatric clinic because they draw attention to themselves in the wider community. Stealing, almost universal in Group R, was less prevalent in Group C. It was of interest that over a third of children in both groups had emotional disorders also and the children in Group R were more seriously disturbed (in terms of symptom counts) in all respects than children in Group C. Children referred from the Hearings and previously known to psychiatrists (Group Rc) were the most disturbed of all and resembled Group R rather than Group C in the nature of their symptoms.

Psychological assessments were available for 34 of the 44 children in Group R and for 58 out of 103 in Group C. Distributions of Full Scale WISC scores were similar (mean FS I.Q. for Group R: 90, SD 14·4; and for Group C: 92, SD 12·1). Nine of the 34 tested children in Group R were backward in reading by 24 months or more compared with their age, while only four out of 58 tested children in Group C has this degree of reading backwardness.

DISCUSSION

In 1972 the newly established children's panels requested psychiatric reports for one in nine children aged 7–16 years who came before them from the city.

Forty-three per cent of these children were already known to psychiatrists and it might be thought that this, rather than the seriousness of their disturbance or adversity of their life circumstances determined the request. However, a comparison of this sub-group (Rc) with the other groups studied, indicated that these children were the most disturbed of all and, apart from their younger age, had the features of Group R as a whole, some to a more marked degree. Group R can therefore be regarded as a homogeneous group of children selected for psychiatric referral because they aroused particular concern at their Hearing. Comparison of children in Group R with antisocial children referred to psychiatrists from other sources (Group C) showed that Group R children were indeed the more seriously disturbed and contained a higher proportion of backward readers.

As expected, all three groups of antisocial children contained an excess of boys. This was least marked for the somewhat younger children referred to the psychiatric services from sources other than the children's hearings. These children, Group C, mostly of primary school age, were less disturbed and presented more often with aggressive behaviour and elimination disorders. They came from a less deprived socio-economic background. Their families were often disrupted, the mother living without a partner. Group R in contrast were, like Group P, mainly of secondary school age and even more often came from disrupted families especially if they were boys, the common pattern being the presence of a substitute father. Children referred from the Hearings but previously known to the psychiatric service (Rc) were intermediate in age but resembled Group R in all other respects.

In view of the fact that children in Group C were on average only a year younger than children in Group Rc and only two years younger than children in Group R, that all the children were over seven and the average age of those in Group C was

10 years, it seems more likely that we are dealing with different types of families rather than with families who appear at the clinic when the mother is either unhappily married or single and reappear via the Children's Hearings when the mother has acquired a new partner. This supposition is strengthened by the greater family size in Groups R and in Rc compared with Group C and by what we know about the parent figures. One third of the fathers in Group R had itinerant jobs and differed significantly from fathers in Group C in this respect. Moreover, approximately one half of the fathers in Group R had a history of criminality, excessive drinking and/or serious psychiatric disorder. While, unfortunately, no comparably detailed information was available for fathers in Group C, this is grossly in excess of what we know of paternal pathology in families of somewhat younger children referred to the psychiatric service from the same city (Wolff and Acton, 1968). The high proportion of boys in Group R who had lost their own fathers and the high levels of pathology among father figures agreed with Jonsson's findings (1967) in a group of institutionalized delinquents. In that group, however, mothers separated from the delinquent child's father rarely acquired other partners, while in our Group P over a quarter and in our Group R almost three-quarters did so. These findings together with the high levels of delinquency in the siblings of children in Group R suggests that in this group serious delinquency in boys was associated with poor socialization and conscience formation because of highly inadequate paternal role models.

In our comparison between the two groups of children known to the Reporter (Groups R and P), considerations of confidentiality prevented direct access to official records of the families of children not referred for psychiatric reports (Group P). For this reason we have no data about their psychiatric status other than the grounds of referral. Although the differences were not statistically significant, proportionally more children beyond parental control were referred to psychiatrists than were offenders and truants. While the social class distributions of families in Groups P and R indicate some under-referral of children from social classes IV and V, nevertheless children referred for psychiatric reports (Group R) had larger sibships. The size of sibship in this group is not therefore a mere reflection of socio-economic status. It is possibly a consequence of the striking and highly significant excess of multiple father figures (31·8 per cent) in Group R compared with Groups P (6·6 per cent) and even C (4·9 per cent). Women with a succession of partners are likely not only to bear more children but also to look after more children other than their own. Yet in Group R the girls who usually lived with both their own parents had the largest number of siblings of all. Large family size may therefore make an independent contribution to serious conduct disorder.

The evidence discussed so far suggests that Children's Panels selected for psychiatric referral children who aroused their concern because of the severity of their psychiatric disturbance and/or the adversity of their family environment. They were significantly younger than other children known to the Reporter. The most striking features of their family background were the high proportion of substitute fathers among the boys, the very large sizes of the families especially of the girls and the footlooseness, criminality, alcoholism and other psychiatric pathology of the father figures in general.

Twenty-three per cent of children before the Hearings were girls and they were referred for psychiatric reports as often as boys. Only one in 10 of the referred girls had previously seen a psychiatrist, compared with over half (18 out of 34) the referred boys. As expected, over 90 per cent of boys before the hearings had committed offences. Among girls, who were somewhat older, a quarter had offended, a quarter were in moral danger and a quarter beyond parental control. Because of the small numbers of girls in Group R few comparisons between boys and girls were made. The fact that in Group R the girls came from even bigger families than the boys and were first or second children in eight out of ten cases suggests that, as Cowie *et al.* have pointed out (1968), the burden of family responsibilities may have contributed to their delinquency.

SUMMARY

Children referred for psychiatric reports by the Scottish Children's Hearings were compared with other children known to the Reporter and with antisocial children referred to psychiatrists from other sources. The first group of children were characterized by the severity of their symptoms and family disturbance. They differed from other conduct disordered children referred to psychiatrists in being older, containing a greater excess of boys and, in the case of boys, more often coming from disrupted families with substitute fathers rather than single mothers. Associated features were very high rates of itinerant employment, criminality, excessive drinking and psychiatric pathology among the father figures and very large sibships, especially among the girls.

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ANNOTATION

SPELLING DIFFICULTIES

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ENGLISH orthography to many people seems illogical and obsolete. It is often suggested that too much emphasis is placed on correct spelling and that this is pedantic and pointless. Children, it is said, should not be preoccupied with the superficial appearance of written words, they should instead be freed from this demand in order to write creatively. Given these views spelling difficulties should be of little concern. However, spelling skill is not what it appears to be at first glance. One might assume that knowing how to transcribe speech sounds into letters according to more or less haphazard rules, best acquired by rote, is basically all there is to being a good speller. Yet, especially in English, a good speller needs to know much more than sound–letter correspondence rules. Mastery of spelling implies a high degree of linguistic competence and hence spelling difficulties cannot be considered a trivial matter.

To make the reading and writing of English easier it has been proposed that a strictly phonetic spelling system should be adopted. Indeed, the idea of a spelling reform to cure and prevent learning difficulties is very attractive, and the various arguments need to be examined. However, there are some unexpected problems with the seemingly straightforward suggestion that there should be as many graphic symbols as there are sounds in a language, and that they should relate in a 1 : 1 correspondence. One such problem is: what sounds is one talking about? In what way could the continuous and infinitely variable speech sounds be translated directly into a limited number of discrete graphic symbols? Speech can be made visible on a spectrograph, but such a picture reveals no natural segments that might correspond to single letters. It is a fiction of the creative imagination of inventors of alphabets that there is a limited number of discrete sounds that make up speech and that can be represented as letters. These sound units (phonemes) are an abstraction, and can only be regarded as types of sounds, not actual sounds. They do not reflect context dependent variations occurring in normal speech. Gleitman and Rozin (1977) give an interesting account of the relevance of phonology and the acquired ability to segment sounds to the use of the alphabet. They conclude that there are abundant reasons why alphabetic writing systems are hard to invent and to learn.

However, the spelling reformer would still argue that once the ability to segment continuous speech into abstract discrete sound units has been achieved, these phonemes should be translated into graphic symbols in a 1 : 1 correspondence of sound and symbol. Learning the sound–letter correspondences would thus enable one to spell any word. There are indeed languages, such as Finnish, in which this occurs. The problems that such systems encounter may, however, outweigh the advantages. One particular dialect only of the language will be represented. Pronunciation changes with time, sometimes with remarkable speed. Either the spelling has to be adjusted continually, or in the end the writing system no longer reflects the "official" pronunciation on which it was once based. Chomsky and Halle (1968) have turned the argument around completely. They state that it is not the only function of writing to represent speech. They make the astonishing claim that English orthography is an optimal system for the English language. This is based on the observation that English spelling in fact represents underlying linguistic knowledge at different levels of linguistic analysis. Klima (1972) has discussed the advantages and disadvantages of various alphabetic writing systems that respectively reflect surface aspects (e.g. the international phonetic alphabet) or underlying aspects of a language (e.g. English spellings that are at variance with pronunciation). From this account one may conclude that there is probably no ideal orthographic system. It is therefore not surprising that different English orthographies have been experimented with since the Middle Ages (Scragg, 1974) and such experiments will probably continue.

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There may therefore be advantages in considering English orthography, and the way in which it is learned, in terms of the way in which it reflects underlying aspects of the language. Haas (1970) has expressed this view as follows: spelling need not be taught as some sort of faulty transcription from sound, but as making transparent underlying grammatical and lexical conditions. English orthography reflects knowledge sometimes on the level of sound and sometimes on the level of meaning or syntax. Therefore children learning to spell take longer than they would using a writing system that was based on sound only. However, the time is not wasted. They learn much about the English language, its history, its provenance from older languages, the underlying roots of words, derivations of meanings and syntactic forms. Hence there are compensations for the effort involved in learning to spell.

However, we can hardly console children with severe spelling difficulties with this promise of additional benefits that might eventually reward their efforts. It is difficult to justify such children spending a much larger proportion of their time in learning to spell than other children. It is not surprising that different teachers may rate the importance of spelling and remedial measures for spelling problems very differently.

From an educational point of view, two collections of papers, one edited by the Scottish Council for Research in Education (1961), and another edited by Wade and Wedell (1974) have emphasized that spelling is a complex skill. Also Peters (1967, 1970) has provided a detailed analysis of spelling competence in terms of different subskills, and has suggested various approaches to the teaching of spelling. In particular, she suggested that it is important to consider spelling problems separately from reading problems. It is now becoming clear that although most reading problems go together with even more serious spelling problems, some presumed reading problems are really specific spelling problems. Further, some poor spellers are excellent readers. There is a risk that they might well not receive any special help. A large proportion of people attending illiteracy classes have specific spelling difficulties, and these are seriously handicapped even though they read adequately. Thus, the incidence of spelling handicap exceeds that of reading handicap, and there are various groups that need to be studied, contrasted and compared.

Causes of spelling difficulties are likely to be as varied as other types of learning disability. Certain external factors of a social, motivational, temperamental and educational nature must play a role, but as these only incidentally and not specifically cause spelling problems, they are not discussed here. Intrinsic factors leading to spelling problems are hard to identify. It has often been suggested that impairments in visual, auditory and sequencing skills might be primarily responsible for spelling problems. This approach which essentially parallels that of research into reading difficulties has been somewhat disappointing. This is not surprising as most poor spellers have a "good ear" as far as their comprehension and production of speech is concerned, and a "good eye" as far as their perception of visual detail is concerned. Thus, although difficulties in auditory, visual and sequencing skills are interesting to study in their own right, they can only partially answer the question: what causes spelling difficulties?

Nevertheless, the possibility of underlying perceptual deficits must not be ignored. Day and Wedell (1972) have shown that individual differences in normal schoolchildren's memory for visual and auditory sequences predict certain types of spelling errors. Boder (1973) suggested that spelling errors that are due to poor auditory skills are characteristic of one subgroup of dyslexia (the dysphonetic). Children with such difficulties cannot tackle an unfamiliar or nonsense word, but are able to rely on a sight vocabulary. Errors due to poor visual skills may characterize another subgroup (dyseidetic). These children may be able to spell regular words and nonsense words according to rules, but do not possess adequate sight vocabulary. Farnham-Diggory and Simon (1975) also distinguished auditory and visual errors. The results of their experiment, in which children were given either visual or auditory cues and either visual or auditory interference tasks, indicated that correct spelling depends primarily on visual cues. However, the nature of these visual cues is uncertain. People do not have little pictures of words in their memory that they retrieve like slides. If one asks people whether they remember such visual details as type of script, letter case, or colour of ink, the task is regarded as meaningless and reveals that any visual image which might exist in memory is very abstract.

An important attempt to explain spelling problems from a neuropsychological point of view was made by Nelson and Warrington (1974). They showed that children who have a severe spelling deficit without a reading deficit have normal verbal skills in contrast to children with reading as well as spelling retardation. Even though both groups of children scored equally poorly on spelling tests, the errors they made were qualitatively different, suggesting that different causes underlay their handicaps. It is most likely that the language dysfunction of the second group caused both their reading and spelling problems. Children with a specific spelling handicap made a larger proportion of phonemically accurate errors. These must have been caused by something other than a language dysfunction. Phonemically accurate renderings of words are what spelling reformers would allow as correct spellings. Indeed such errors are also characteristic of the occasional spelling errors of good spellers and of unintentional slips of the pen.

These studies have shown that the qualitative analysis of spelling errors is of the utmost importance for the investigation of the causes of spelling problems. There is therefore a great need for a refined diagnostic spelling test. One of the reasons that no satisfactory test of this kind exists is the lack of a suitable system for classifying spelling errors. The development of such a system depends both on a theory of spelling competence and performance, as well as on a theory of the orthographic structure of English. Just as there is no definite description of English syntax, the description of orthographic rules is still a matter of debate. Better understanding of the psychological processes would aid linguistic description and vice versa.

It is difficult to see how the classification of errors in terms of omissions, insertions, doubling, transpositions and substitutions of letters could throw light on spelling problems. This sort of classification remains entirely on the surface aspects of performance and assumes that the single letter is the appropriate unit. This must be inadequate since sound–letter correspondences are often based on patterns of several letters or whole words. A child may approach the writing of a word from the total sound image which he may then fail to analyse into details. This is evident from the invented spellings of very young children (Read, 1971; Chomsky, 1971). In contrast to the letter by letter analysis of spelling errors, the classification of misspelled words into those that are phonemically accurate and those that are not has been very fruitful (e.g. Nelson and Warrington, 1974).

However, a qualitative analysis of errors should also make use of other information available in the written word. Contrasting spelling errors in different types of words is a useful way to test specific hypotheses about underlying causes of spelling problems. Differences in the spelling of regular and irregular words (Schonell, 1942) can indicate to what extent a child depends on rules or on rote memory for specific words. The spelling of carefully selected nonsense words can indicate which sound-letter correspondence rules the child has mastered. Boder (1973) suggests that the spelling of "known words" should be contrasted with the spelling of "unknown words". This can indicate whether the child is able to reproduce words from his sight vocabulary. Interestingly, she found that dyslexic children only achieve a level of 50% correct responses in relation to words they can read easily, while normal children achieve a level of 70–100% correct responses.

Which framework is suitable to explain different types of spelling errors? It is clear that a theory of the processes that underlie spelling skills very much determines the methods used for exploring both causes and cures of spelling difficulties. One model considers the underlying processes as a conglomeration of subskills. Another, e.g. the information processing model, considers the interaction of such skills. Simon (1976) has developed such a model and has described a computer simulation of the spelling process.

Deficits can also be considered in terms of input, storage and output processes. This model leads readily to testable hypotheses that may account for spelling difficulties. First, the initial perceptual analysis of a word may be at fault. Alternatively, only the memory images of words may be weak, or ability to remember spelling rules may be poor. Lastly, the poor speller may have no problems either in the initial analysis, or in his memory for words, but may fail in the retrieval of spelling patterns. In this case, a child would recognize whether or not a word was correctly spelled, but would be unable to write it to dictation. This last possibility has been investigated less than the others. Yet, retrieval or output processes in spelling are very likely to cause at least some types of spelling problems. For some people, for instance, there may be a basic difficulty in retrieving letter patterns by sound cues. Thus, a sound may evoke the meaning of a word, and the meaning may then evoke the letter pattern, but the sound may not evoke the letter pattern directly, without the intervention of meaning. The converse, a disability in translating graphemes to phonemes, has been demonstrated by Patterson and Marcel (1977). They have shown that patients with acquired phonemic dyslexia cannot read nonsense words, but can often guess the meaning of real words.

A different framework for understanding spelling difficulties is based on the notion that a writing system represents language at different levels. This is discussed, for example, by Baker and Smith (1977) who showed that competent language users must employ different levels of linguistic analysis in such basic skills as establishing which syllable of a word should be stressed. The use of complex linguistic rules is not something of which the language user is normally aware. Part of learning to spell is the growing awareness of such aspects of language, though these will never be fully available for conscious introspection. It is therefore possible to consider spelling difficulties in terms of a lack of awareness of the representation of linguistic knowledge at different levels. Such difficulties are aggravated by some problems of English orthography. It seems capricious that some words are spelled so as to reflect pronunciation, and others to reflect meaning. It may be difficult to predict when one applies rather than the other. However, it is often useful that sound alone does not determine spelling, and that meaning can be reflected clearly by the letters of the word. This is the case in homophones (e.g. sail–sale, see–sea, four–for). These words are more readily distinguished in their written than in their spoken form. The fact that almost any sound can be represented by a variety of letters (e.g. ee = ea = e-e = ey) must of course present special problems. The choice of the alternatives, however, is usually determined by a deeper level rule. This rule is rarely haphazard, but appears to be so to the speller who is misled by the idea that letters should reflect sounds and nothing else.

Thus, spelling difficulties can be looked at in terms of levels of representation of linguistic knowledge in written words. There may be deficits with specific levels of representation: the level of sound (or phonemic) analysis and how phonemes relate to graphemes, or the level of meaning (or morphemic) analysis and how morphemes relate to graphemes. A deficit in the analysis of sound would explain errors that do not sound correct, such as "fegr" for "finger". A deficit in the analysis of meaning would explain errors that sound correct but refer to a different meaning, such as "berrial" for burial, the required root being "bury", not "berry". There are presumably other levels which correspond to other spelling errors which would merit exploration. However, the two types of errors due respectively to faulty realization of sound–letter and meaning–letter relationships are particularly striking and persistent, and these will be discussed briefly.

As stated earlier, the basis of alphabetic writing is phonological analysis, hence the most serious spelling (and reading) problems should be due to difficulties on this level. The infinitely numerous sounds of speech have to be reduced to a few abstract phonemic elements in order to relate them to the letters of the alphabet. This phonological analysis is difficult to learn as it is to a large extent arbitrary. Sound segmentation, and its inverse, sound blending, entirely depend on this analysis which is deficient in many poor spellers and poor readers. An error such as "fegr" for "finger" does not mean that the child hears a blend of f-e-g-r. The child hears and produces the correct sound, but cannot segment the central sound in this word into the two components of vowel and nasal consonant that so naturally suggest themselves to the skilled user of the alphabet. Neither a spectrograph, nor the ear itself can arrive at this particular segmentation of the sound for the word "finger". It is only by means of a rule system as embodied by the phonemic alphabet system, that this analysis can be achieved. It is therefore not surprising that difficulties in segmentation and blending are frequently encountered.

Many English words are spelled in a particular way because they preserve the root from which they are derived. Such words are responsible for a large proportion of spelling errors. These errors suggest a dominance of the phonological level. People who characteristically make errors of this type do not have any problems in knowing how sound is represented by letters. On the contrary, they use this knowledge extremely well in phonemically accurate misspellings. Thus they might write "sichiatry" for psychiatry, because they disregard the root "psyche". No errors occur in words where there is no such discrepancy or ambiguity as to which one of two or more letter patterns should be chosen to represent a particular sound. The discrepancies (e.g. "lamb" but not "lam") and ambiguities (e.g. "phone" but not "fone") that do exist present major difficulties to this group of bad spellers. The discrepancies are often due to a change in pronunciation over time. Thus the "b" in "lamb" was pronounced once. In this category of errors the visual letter pattern may be helpful and indeed may serve as a means of acquiring knowledge about the root of words. Yet, the correct spelling of these words need not necessarily depend on a visual image that is "copied" for writing. The knowledge of the history of the word and/or its relationship to other words of the same root would equally well lead to correct spelling. Thus, "sign" will be spelt correctly, if one realizes its relationship to "signal", and this gives a sound cue rather than a visual cue to the spelling pattern. A child with this spelling problem would be helped by a spelling reform in his writing. However, he would be helped at a cost. His reading might well suffer. Reading for meaning does not necessarily involve phonological analysis, but may bypass sound. Hence the same child who writes "sichiatry" may not recognize this word, but only when it is spelled psychiatry.

SUMMARY AND CONCLUSIONS

Spelling difficulties are sadly neglected both in a practical and theoretical sense. The nature of the alphabet writing system is such that written words do not directly reflect speech sounds. Letters are based on artificial units that are abstractions of continuous and infinitely variable speech sounds. Most alphabetic writing systems preserve various kinds of linguistic information at different levels of linguistic analysis. The English writing system sometimes reflects abstract sound units based on current pronunciation and sometimes reflects roots of words or earlier pronunciations. Learning to spell therefore is not a dull task relating sounds and letters in a largely arbitrary fashion, but involves learning a wealth of knowledge about the language. Spelling reform based on the representation of only the phonological level of language would help some poor spellers but not others. Such orthography would have to change with changing pronunciation. For some it would probably increase the difficulty of reading, e.g. it would lose the distinction between a host of homophones, such as for–four, sail–sale.

A satisfactory theory of spelling difficulties is not available and its development will depend on a better understanding of orthographic structure as well as on a better understanding of the psychological processes underlying the writing of words.

There is no doubt that spelling difficulties are due to a large variety of causes. It is suggested here that two major types of deficit are due to difficulties in relating both the sound and the meaning of words to their written representation. These two problems may well define two distinct types of spelling problems. Each would be characterized by specific and qualitatively different errors. However, the areas of spelling as a skill and as a problem are still very obscure and there is no evidence which remedial measures, if any, would be of most value to a child with spelling difficulties. Meanwhile, the least we can do is to take spelling difficulties seriously and to treat poor spellers sympathetically.

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ANNOTATION

THE BEREAVED CHILD

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INTRODUCTION

BEREAVEMENT interests mental health professionals for a number of reasons. The death of a significant person is a discrete, datable event which usually constitutes a massive psychic trauma to an individual and which may have immediate and later effects on personality, health and general functioning. The death of a spouse leads to profound grief reactions which disrupt normal functioning usually for between 3 months and 2 years. During this period a small but higher than expected number of adults develop mental and physical illness and mortality rates are higher than normal (Parkes, 1972).

The effect on a child of a parent's death interests theoreticians (Bowlby, 1960, 1961, 1963; Rutter, 1972) because the study of such children may illuminate our understanding of the factors necessary for normal development. It has also aroused the interest of clinicians who hope that intervention before the onset of pathology, or when it first manifests itself, might prevent later difficulties.

There is now a number of large-scale population studies linking adult psychiatric disorder with the death of a parent in childhood [see Granville-Grossman (1968) for a critical review of the studies to that date, and Birtchnell (1970a, 1971, 1972) and Brown *et al.* (1977) for later studies]. But there are few adequate prospective studies on how children are affected both immediately and later by the death of a parent.

What follows is an attempt to summarize our present knowledge, including a look at variables that might affect outcome after childhood bereavement. We know even less about the effect on children of the death of siblings and other relatives, teachers, friends and pets, and this will not be considered further here. In many studies loss of a parent by death is not distinguished from loss by separation, divorce or desertion. No attempt is made to review this literature (see Rutter, 1972).

INCIDENCE OF PARENTAL DEATH

The number of orphaned children has fallen steadily this century. The decline in parental deaths is particularly steep for women, and fathers account now for four-fifths of all parental deaths (Birtchnell, 1972). About 200,000 children under 16 in England and Wales, one-fifth of all single-parent families, have lost a parent by death (Finer, 1974). Thus about 1·6% of the child population is orphaned of at least one parent.

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INCIDENCE AND NATURE OF DISTURBANCES IN CHILDREN AND ADULTS

The only controlled study of bereaved children is by Rutter (1966). He found that over twice as many children attending a psychiatric clinic had lost a parent by death as would be expected from comparable death-rates in the general population. He also found more bereaved children in a control group attending a paediatric clinic than in a dental control group, although in both control groups there were fewer bereaved children than in the "psychiatric group". About 14% of children attending one Child Guidance Clinic had been bereaved of a close relative in the recent past (Black, 1974).

In Rutter's (1966) study there was no clear association with any particular psychiatric syndrome. Others looking at clinic attenders, have found a high incidence of depressed mood, phobic disorders and especially school refusal, among bereaved children (Arthur and Kemme, 1964; Caplan and Douglas, 1969; Black, 1974). An association between parental loss from any cause and anti-social disorders, particularly delinquency, has been reported (Gregory, 1965) but the evidence for a specific association with bereavement is not convincing.

Often disorders, if they occur at all, develop some years after bereavement. Rutter (1966) found in one-third of his clinic sample that there was a gap of 5 years or more between the death and the onset of symptoms.

Two recent population studies have found a small but significant association between depression in adults and early parent death (Birtchnell, 1972; Brown *et al.*, 1977). These studies overcame the methodological difficulties (Granville-Grossman, 1968) which were responsible for contradictory findings in earlier studies. No other psychiatric disorders except alcoholism in women (Birtchnell, 1972) have convincing associations with bereavement. Attempted suicide is commoner in adults who suffered loss in childhood (Greer, 1966; Hill, 1969; Birtchnell, 1970b).

Cognitive differences between bereaved children and their peers have been little studied. Lifshitz (1976) in an interesting paper, reports a study using classroom controls, of 34 children who had lost a father in the Israeli Wars, 3–6 years previously. She found with repertory grid and other tests and observations, that children orphaned before the age of seven tended to show "significant constriction in awareness of their broader social milieu" and restless behaviour. Presumably the controls had had similar war experiences. No information is given about ability or attainment levels.

It seems established that children and adults are more prone to depression if a parent dies during their childhood. Children are more likely to be referred to a child psychiatric clinic and may have a higher incidence of phobic disorders, especially school refusal. The, often long, gap between the bereavement and subsequent onset of disorder raises the question of causation and makes a search for factors which may modify outcome important.

FACTORS MODIFYING OUTCOME

Factors in the child

Age. There is no general agreement about children of any one age being at particular risk. Rutter (1966) found that the significant age for loss associated with later disturbance was 3–4 years. Birtchnell (1972) found significant associations with psychiatric disorder only in adults who were bereaved before the age of 10. Hill (1969) found bereavement between the ages of 10 and 14 years to be significantly correlated with adult depressive illness. Brown *et al.* (1977) found that depressive illness in women was associated with loss of mother before the age of 11.

Children's concepts of death develop slowly (Anthony, 1941; Koocher, 1974) and it is likely that young children perceive losses from any cause in similar ways until the age of 4–5 years. Even then, until about 10 years they may think that death is reversible.

Thus children who lose a parent while in the stage of cognitive development which attributes a causal relationship to events related in time, are more likely to fear retaliation from a parent towards whom they may have entertained ambivalent feelings (Wolff, 1969) and who, they believe, can return from the dead. Religious beliefs may reinforce these misconceptions.

The only prospective study of the effect of bereavement on children of different ages (McConville *et al.*, 1973) looked at 18 children aged 5–12, resident in a Children's Home when the two Directors and their dogs died in a fire. There were differences in response according to age. Younger children used less adaptive mechanisms such as denial, and those who used this defence most took longest to recover. But all these children had had previous losses, and the Directors who died, although important figures in the children's lives, were not their parents or immediate parent-substitutes.

Death of a parent in adolescence seems to be associated with an increased risk of attempted suicide in depressed adults (Hill, 1969; Birtchnell, 1970b).

Sex. Boys are generally more vulnerable to stress (Rutter, 1972) but what evidence is available, unsatisfactory though it is, points to girls being particularly vulnerable to the death of a parent. Loss of mother appears to be more important for girls under 11 years (Brown *et al.*, 1977; Birtchnell, 1971, 1972) and loss of father for adolescent girls (Hill, 1969; Birtchnell, 1972).

Ordinal position. Having an older sibling of the same sex as the dead parent apparently protects against subsequent disorder, but being that elder sibling increases the risk (Birtchnell, 1971).

Factors associated with a dead parent

There is no clear association with the sex of the dead parent except as described above. Arthur and Kemme (1964) compared the loss of parents of the same sex with the loss of parents of the opposite sex and concluded that denial of loss most often occurred in the latter group, while death of parents of the same sex was associated with guilt. No information is given about the comparability of the two groups and the difference may be due to differences in the composition of the groups.

The length of the preceding illness could affect outcome. There is no clear information on this in Rutter's (1966) study although in one-third of disturbed children, the parents had been ill for at least a year. In adults, the realization and acceptance that one's spouse will die does seem to improve outcome (Parkes, 1972).

The previous relationship with a dead parent may be an important factor. In the death of a spouse, a high degree of ambivalence in the relationship is associated with bad outcome (Raphael and Maddison, 1976). This remains to be studied in children.

The mode of death is known to be associated with outcome in adults. Suicide by a spouse increases pathology in the survivor (Raphael and Maddison, 1976). Morbidity is high in the children of parents dying by suicide (Shepherd and Barraclough, 1976) but this seems related to the pre-suicide stresses of living with a mentally ill parent.

Previous experiences

Rutter (1972) reviews the evidence for a general effect of previous adverse experiences on the development of psychiatric disorder. Such experiences include hospitalization, separation from parents, frequent changes of home and school, illness, accidents and lack of stimulation. It is probable that these are cumulative and would have an effect on the resilience of the child in coping with bereavement, but it has not been studied specifically for bereaved children.

Subsequent experiences

The death of a parent brings with it many changes. Income may drop. The surviving parent grieves, other adults may or may not take over some of the dead parent's functions. There may be changes of home and school and the status of the family may be reduced. The family may feel stigmatized (Rutter, 1972). None of these factors has been adequately studied. The response of the surviving parent to the bereaved child has been noted by some workers to be important in outcome (Becker and Margolin, 1967) but the study lacks controls. Indeed, most of the literature in this field consists solely of clinical descriptions of children referred for disabling symptoms, so that it is not possible to ascertain what happens to the majority of bereaved children. The evidence is that most of them do not come to professional attention. For example, Birtchnell (1970a) found that about 10% of his inpatient sample were bereaved before the age of 5, but so were approximately 5% of his controls.

One consequence of bereavement, especially when the mother dies, is placement in a Children's Home. Caplan and Douglas (1969) found that in a group of bereaved children attending a clinic, depressed mood was significantly associated with placement in a Children's Home.

Intervention as a factor modifying outcome

Bowlby (1960, 1961, 1963) and other psychoanalytic writers [summarized in Miller (1961)] have suggested that pathological mourning reactions are more common in children than in adults. These include denial, fantasies of reunion, absence of overt grief and persistent feelings of anger and reproach. All the papers reviewed by Miller (1971) were case-studies of children in analytic treatment at the time of bereavement or referred subsequently because of symptoms. There has been no study of an unselected sample of recently-bereaved children receiving treatment, comparing them with untreated controls. Two studies of intervention in widowed adults have shown significant improvement in outcome. Raphael and Maddison

(1976) used various techniques of short-term therapeutic intervention with widows who had been previously identified as likely to have bad outcomes. They were able to reduce the frequency of illness compared with an untreated control group. Parkes (1977) in evaluating the family care service offered by a hospice specializing in the care of the dying patient and his family has similarly shown differences between the treatment and control groups. Studies are needed with children and their families. Bereaved adults who express their grief and sorrow recover more quickly. If bereaved children do have a bad outcome, is it because they are not allowed to grieve or because they cannot grieve? Psychoanalytic treatment by E. Furman and her colleagues (1974) seems to show that even very young children can be helped to work through the complicated feelings aroused by the death of a parent. Whether this improves outcome remains to be tested, but all clinical experience tends to support the theory that young children whilst having difficulty in expressing grief, can be helped by therapists who encourage its expression.

CONCLUSIONS

Bereaved children are more likely than children from intact homes to develop psychiatric disorders both in childhood and in adult life, although the differences are small. Depressive and phobic disorders are most commonly seen although other disorders may also occur. Children most at risk are those bereaved at 3–5 years, and in early adolescence. The ordinal position and sex of the child also seems important. Much is unknown about the subsequent history of bereaved children. Clinical experience indicates that children can be helped to express grief. The study of such therapeutic interventions with children and the surviving parent seems one of the more promising areas for further research as does the study of bereaved children who do not develop pathology.

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RAPHAEL, B. and MADDISON, D. (1976) The care of bereaved adults. In *Modern Trends in Psychosomatic Medicine*—3 (Edited by HILL, O. W.), pp. 491–506. Butterworths, London.

RUTTER, M. (1966) *Children of Sick Parents*. Oxford University Press, Oxford.

RUTTER, M. (1972) *Maternal Deprivation Reassessed*. Penguin, Harmondsworth.

SHEPHERD, D. M. and BARRACLOUGH, B. M. (1976) The aftermath of parental suicide for children. *Br. J. Psychiat.* **129,** 267–276.

WOLFF, S. (1969) *Children Under Stress*. Allen Lane, London.

J. Child Psychol. Psychiat., Vol. 19, 1978, pp. 293 to 294. Pergamon Press. Printed in Great Britain.

CRITICAL NOTICE

Child Personality and Psychopathology: Current Topics. (Vol. 3). Edited by Anthony Davids. John Wiley, New York, 1976, pp. x + 299. £14.50.

This is the third volume in a new series of annually appearing edited volumes showing progress being made in the understanding of personality and psychopathology in children and youth. The volumes are designed as reference sources for clinicians and theoreticians and texts for advanced students, with emphasis on topicality and original presentations. The previous two volumes (see reviews in this journal) have covered various aspects of child development and childhood psychopathologies, most particularly the childhood psychoses and minimal brain dysfunction, with a chapter each on neurotic and psychosomatic disorders (asthma and phobias). Each issue begins with the preface to the general series followed by an introduction which summarizes the contents of each of the chapters in the volume, in this case eight in number. This introduction is well written and useful for refreshing one's memory about the particulars of a given chapter. The topics in this volume are, also characteristically, divided into various parts—personality development, sexual development and psychophysiologic and behavior disorders.

The chapters in Part 1 on personality development are two in number, the first is a fascinating, though tantalizing (because of its preliminary nature and absence of definitive findings) study by Cohen and Eiduson, of patterns of child rearing in three alternative lifestyles—communes, social contracts and single parents, with a control group of traditionally married couples. The study, of longitudinal design, begins in the third trimester of the mother's pregnancy and describes the ostensible values and habits of the particular alternative life styles, the ecological background, pregnancy characteristics and preparation for parenthood. The resemblance of attitudes and behaviors between the traditional and alternative lifestyle groups is considerably more striking than any differences. It is to be hoped that this interesting longitudinal study will survive its cost, the drain on the investigators' energies and commitments and the transiency of many alternative lifestyles.

The next chapter by Singer and Singer is devoted to an important area, namely imaginative play and pretending in early childhood and is a summary of the theoretical and empirical findings in this much neglected area. In general, this chapter was rather tedious and some of the conclusions would hardly have struck any mother as particularly novel or surprising.

In Part 2 there are three chapters, one on juvenile gender identity, an elegant conceptual and empirical summary by Money and Higham followed by a fascinating study by Green of masculinity and femininity during boyhood in a hundred families, and a review of homosexual orientation and its antecedents by Thompson and McCandless. It is impossible adequately to précis these three reviews except to indicate their excellence and informativeness. However, they also identify our ignorance of the factors responsible for deviant sexual development and the ultimate significance of various aberrations of sex role type behavior in childhood. Particularly noteworthy as profitable future research areas are the role of the father and of the peer group. The mystery of why some boys seem to be feminine in their behaviors and preferences in the first instance remains. The subsequent response of parents and peers in reinforcing this behavior through rejection, or in the case of parents, non-intervention, seems fairly clear as does what seems to be a probably better than 50 per cent chance that such behavior in early life augers some degree of what Money calls gender-role transpositions ranging from the extreme of transexualism to bisexualism. The role of physiological factors remains unclear though the patient work of Money and his group with natural and iatrogenic gender accidents has suggested that such influence is unlikely to be a major determinant though it may set the stage in some instances.

Part 3, devoted to psychopathological conditions, has two chapters on hyperactivity. The first, by Campbell, formerly of the Montreal group, is a review of the developmental course and treatment of the condition and must rank as one of the most lucid and informed shorter summaries of this particular area. The second, by Satterfield, reviews central and autonomic nervous system function in the hyperactive child syndrome, concentrating particularly on his own work, but looking at treatment and research implications. In the main, this is couched primarily in terms of arousal theory (that is, that some hyperactive children are under-aroused and under-arousable and stimulants seem to improve this though the physiological correlates of pharmacotherapy are less than would be expected from simple increase in arousal). This is also a highly erudite readable review which, however, tends to gloss over some of the fundamental contradictions in the literature.

The last chapter is a neuropsychological approach to etiology, prevention and treatment of juvenile delinquency by Berman and Siegal. This chapter is a disappointment and well below the high scholarship manifest in other chapters. It would appear that the authors are imperfectly acquainted with the literature on juvenile delinquency—many of their references are old, they do not seem to be familiar with behavioral approaches to the treatment of delinquency such as Achievement Place or the special program at the National Training School or with community programs such as the Sacramento Project or with subclassification of delinquents by such people as Quay, Palmer or even Eysenck. There is also a rather uncritical approach to the validity of neuropsychological tests, and even more of the ability of remediation programs to do anything about these defects. Also naive is the minimizing of sociofamilial variables and the fact that the neuropsychological deficit (mostly reducible to impaired intellectual ability) rather than being the cause of delinquency, may simply reflect ecological factors causal of both. The chapter ends with an evangelical plea for mandatory neuropsychological disability screening in the first year of school, revamping of programs for delinquents and a movement away from large institutions to cottage oriented group living situations and so on. Most of these are neither new nor easily practicable. The argument for a physiological predisposition to the delinquency is also nothing new though persons who have argued for it, such as Quay and Eysenck, have had it tied rather more closely to a meaningful subclassification of delinquency.

Overall, the series has aimed at, and increasingly more successfully achieved, a high standard with an emphasis on empirical data, critical reviews and well-argued theoretical implications. As library volumes of a reference nature these can be highly recommended though their cost and presumably restricted distribution still continue to raise questions about their suitability as substitutes for integrated texts or well-established, high quality journals.

John S. Werry

J. Child Psychol. Psychiat., Vol. 19, 1978, pp. 295 to 296. Pergamon Press. Printed in Great Britain.

BOOK REVIEWS

Hyperactive Children. Diagnosis and Management. D. J. SAFER and R. P. ALLEN, University Park Press, Baltimore/London/Tokyo, 1976. pp. xiii + 239. £5.50.

Hyperactive Children is a concise and clear book. It is written by a psychiatrist and a psychologist, both of whom work in Baltimore, and it gains in coherence by avoiding outside authors. It draws on a large amount of published material, as well as on the clinical experience of the authors, to give a lucid account of current American practice in the management of "hyperactivity". In their view, hyperactivity is a useful diagnosis, which probably comprises several syndromes; the major cause is biological, and psychosocial factors act mainly to alter the course and outcome; the basis of treatment is a combination of medication with stimulant drugs and contingency management.

Perhaps the least convincing section of the book is the consideration of diagnosis. Admittedly, this is a controversial and difficult topic, but it is also critical for the evaluation of treatment plans. The non-American reader will wish to ask: "Who are these hyperactive children, anyway?" One answer can be inferred from the figures given for the prevalence of the condition: clinical hyperactivity is to be found in 8–9% of elementary school boys, in 30–40% of children attending a child guidance clinic, and in 80% of children who exhibit problems both of learning and of conduct. It seems very likely that it overlaps the U.K. diagnosis of conduct disorder. Certainly it is distinct from the severe problems of the hyperkinetic syndrome which are seen chiefly in retarded or epileptic children. Making the diagnosis of hyperactivity is guided strongly by the report of the schoolteacher, and there is little discussion of the variety of factors which may lead to a teacher rating a child as overactive or inattentive. One may hope that, with further research and growing experience, it will be possible for future editions or future authors to discuss the differential diagnosis of the symptom of hyperactivity rather than the diagnosis of hyperactivity as a condition.

A chapter on diagnostic tests gives a useful collection of clinical forms and psychological tests. The major part of the book, however, deals with various aspects of management with an emphasis on practical day-to-day details. The chapter on drug treatment is a sound general guide to the use of stimulant medication. Inevitably one disagrees with details (a starting dose of methylphenidate of 20 mg seems rather high) but on the whole it can be recommended to all who intend to prescribe, especially for its emphasis on the careful evaluation of drug effectiveness. A major problem, however, is the question of what the indications for drugs should be. In their view, the primary indication is merely the presence of hyperactivity (although very little evidence supports this). They do not flinch from the figure of more than 300,000 children in the U.S.A. receiving amphetamine-type drugs; but neither do they consider the social implications of such widespread prescribing. Surely one should be cautious in the absence of good evidence for long-term effectiveness of drugs.

The several chapters on behavioural methods give a helpful and balanced introduction to their use for behavioural problems in general. There is little that is specific for hyperactivity, and the major problems that may be associated with the severe form of the hyperkinetic syndrome (such as recklessness, self-injury or repetitive aggression) are not discussed. They deal with established methods of reward and punishment in the home and the classroom, and also give sensible advice on general discipline. Indeed, a strength of the book is its synthesis of individual methods into an overall treatment plan. Some passages suggest that the authors have relatively affluent and well-organized families in mind: they mention difficulties arising from a stereo in the child's room, not from poverty, overcrowding or unsuitable housing.

Counselling and psychotherapy are rather cursorily covered. This is a pity, because what is written suggests that the authors have substantial experience in this area, and also because changing attitudes may be a necessary condition for behavioural change. Perhaps the emphasis reflects the view that psychosocial factors have little importance in causation. A footnote dismisses psychological causes on the basis that maternal deprivation has not been proved to be a cause: this is cavalier argument.

Drs. Safer and Allen have written a very clear review of the behavioural and pharmacological treatment of U.S.-style "hyperactivity". Many questions remain unanswered, notably the value of the diagnosis itself and the allied question of the indications for these treatments. For British readers the book will perhaps be a stimulus to re-evaluate our treatment of disorders of conduct rather than that of the more narrowly defined hyperkinetic syndrome.

ERIC TAYLOR

Perinatal Addiction. Edited by RAYMOND D. HERBISON. Spectrum Publications Inc., New York, 1975, pp. ix + 391. No price quoted.

THIS BOOK records the proceedings of a conference sponsored by the National Institute of Drug Abuse and Vanderbilt University which had previously been published in the journal *Addictive Diseases*, Vol. 2, No. 2 and 3, 1975.

The short preface by William Pollin of the National Institute of Drug Abuse expressed the hope that this will be the first of a series of monographs which will "Encourage a more sophisticated approach to the public health management of children born of drug-abusing mothers and foster the basic research that must serve as the ultimate foundation for better health care"—a worthy cause!

Chapter headings include Epidemiology; Prenatal Drug Exposure; Neonatal Considerations: Special Considerations of Addictive Drug Effect on the Neonate. Under these general chapter headings one finds, under Epidemiology, a contribution on "Current Concepts in the Management of the Pregnant Opiate Addict" and under Prenatal Drug Exposure one finds contributions on Drug Biotransformation; Teratogenic and Mutagenic Considerations: Cytogenetic Risks to the Offspring of Pregnant Addicts. The Fetal Alcohol Syndrome and Clinical Observations on Methadone-Maintained Pregnancies. Under the general heading Neonatal Considerations we have Neonatal Abstinence Syndrome: Recognition and Diagnosis; Biomedical Applications of Vapor Phase Analysis; Neonatal Abstinence Syndrome; Assessment and Management; Phenobarbital Disposition in the Neonate and so on. Under Special Considerations of Addictive Drug Effects on the Neonate we find studies on Neurological Aspects of Perinatal Narcotic Addiction and Methadone Treatment; Perinatal Narcotic Addiction in Mice; Sympatho-adrenal Development in Perinatally Addicted Rats; Differential Effects of Heroin and Methadone and Birth Weights, and so on. There are some 27 papers in all, some short discussion sections and two long discussion sections. As will be gathered from the above selection of title headings and paper headings a wide representation of specialist fields ranging from purely clinical to the basic sciences is found in the contents of this book.

I have quoted the above chapter headings, etc. to demonstrate the areas covered and the fact that this collection of papers with minimal linkage in conceptual framework, is unlikely to appeal to readers other than those who have an academic interest in the total field covered. The papers themselves are of variable quality and it would be invidious, nay impossible, to select one or another for criticism or eulogy since few are in a position to be experts in all the fields covered.

For the practising clinician who wants to know what to do in treatment there are no clear-cut agreements or guide lines. Many areas are covered in which tentative data are presented and the need for further research stressed. It would not serve, in my view, as a worthwhile reference book for clinicians to buy and it might be better for such persons to get the appropriate copies of the journal *Addictive Diseases* from the library.

For academic departments, libraries, and for countries where the problem of drug addiction is as prevalent as in the U.S.A., however, this book contains a useful collection of papers which reviews the knowledge in this relatively new field and will stimulate further interest and enquiry. Its value, in the United Kingdom, other than in academic units and university libraries is limited.

P. H. CONNELL

J. Child Psychol. Psychiat., Vol. 19, 1978, pp. 297 to 299. Pergamon Press. Printed in Great Britain.

BOOKS RECEIVED

Noele Arden: **Child of a System.** Quartet Books, 1977. £3.95.

James J. Bosco and Stanley S. Robin (Eds.): **The Hyperactive Child and Stimulant Drugs.** University of Chicago Press, 1977. £7.00.

Tom Bower: **The Perceptual World of the Child.** Fontana/Open Books, 1977. £1.00.

Katherine Briggs: **A Dictionary of Fairies.** Penguin, 1977. £1.50.

Carl Braun and Victor Froese (Eds.): **An Experience-Based Approach to Language and Reading.** University Park Press, 1977. £11.25.

Christine Cope and Elizabeth Anderson: **Special Units in Ordinary Schools.** Institute of Education, 1977. £2.95.

Edith Cobb: **The Ecology of Imagination in Childhood.** Routledge & Kegan Paul, 1977. £5.75.

Gerard Chrzanowski: **Interpersonal Approach to Psychoanalysis: Contemporary View of Harry Stack Sullivan.** Gardner Press, 1977. £12.70, $21.50.

Dilys Davis and Mary Boston (Eds.): **The Child Psychotherapist and Problems of Young People.** Wildwood House, 1977. £8.50.

Edward de Bono: **Lateral Thinking: A Textbook of Creativity.** Penguin, 1977. 80p.

Peter Dickenson: **Chance, Luck and Destiny.** Peacock/Penguin, 1977. 80p.

H. J. Eysenck and S. B. G. Eysenck: **Psychoticism as a Dimension of Personality.** Hodder & Stoughton, 1976. £6.50.

H. J. Eysenck: **Psychology is about People.** Penguin, 1977. 90p.

Seymour Fisher and Rhoda L. Fisher: **What We Really Know About Child Rearing: Science in Support of Effective Parenting.** Basic Books, 1976. $12.50.

Erich Fromm: **The Anatomy of Human Destructiveness.** Penguin, 1977. £1.50.

Barbara Furneaux and Brian Roberts (Eds.): **Autistic Children: Teaching, Community and Research Approaches.** Routledge & Kegan Paul, 1977. £5.50.

Alan Gauld and John Shotter: **Human Action and Its Psychological Investigation.** Routledge & Kegan Paul, 1977. £5.50.

Jacqueline Goodnow: **Children's Drawings.** Fontana/Open Books, 1977. £1.25.

David J. Hall: **Social Relations and Innovations.** Routledge & Kegan Paul, 1977. £5.25.

Jon Halliday and Peter Fuller (Eds.): **The Psychology of Gambling.** Penguin, 1977. 95p.

D. W. Hamlyn: **Experience and the Growth of Understanding.** Routledge & Kegan Paul, 1978. £6.50.

Michel Hersen and Alan S. Bellack (Eds.): **Behavioural Assessment: A Practical Handbook.** Pergamon Press, 1976. No price given.

John Holt: **Instead of Education—Ways to Help People do Things Better.** Penguin, 1977. 80p.

William E. Homan: **Child Sense: A Guide to Level-headed Parenthood.** Harper & Row, 1977. £5.95.

Health Care Evaluation Research Team: **Research Reports Nos. 123, 124, 125 & 126,** 1977.
The Wessex Portage Project: a home teaching service for families with a pre-school mentally handicapped child. Parts I & II.
Evaluation of locally based hospital units for the mentally handicapped in Wessex: Report on professional's following of rules, some consequences for clients, and changes in demand for residential care.
Summary of Current Research in Mental Handicap Work.

Home Office: **Report on the Work of the Prison Department.** H.M.S.O., 1976. £1.65.

Home Office: **Powers of the Courts Dependent on Imprisonment.** H.M.S.O., 1976. 50p.

Home Office: **Report on the Work of the Prison Department – Statistical Tables.** H.M.S.O., 1976, £2.15.

Home Office: **Prisons and the Prisoner.** H.M.S.O., 1977. £5.25.

Joan M. Hutten: **Short-term Contracts in Social Work.** Routledge & Kegan Paul, 1977. £4.50 cloth, £2.20 paperback.

Barbel Inhelder and Harold H. Chipman (Eds.): **Piaget and His School.** Springer-Verlag, 1977. 36.20 Dm, $14.80.

Dorothy Jeffree, Roy McConkey and Simon Hewson: **Let me Play.** Souvenir Press, 1977. £4.00 hardback, £2.00 paperback.

Dorothy Jeffree, Roy McConkey and Simon Hewson: **Teaching the Handicapped Child.** Souvenir Press, 1977. £5.50 hardback, £3.25 paperback.

F. N. Johnson and S. Johnson (Eds.): **Lithium in Medical Practice.** International Medical Publications, 1977. £12.50.

Leon J. Kamin: **The Science and Politics of I.Q.** Penguin, 1977. 95p.

S. N. Karpova: **The Realization of the Verbal Composition of Speech by Preschool Children.** Mouton, 1977. 80 Dm.

R. L. Keele: **Let's Talk.** Brigham Young University Press, 1977. £3.00.

Chris Kiernan and Malcolm Jones: **Behaviour Assessment Battery.** NFER, 1977. £5.95.

Robert M. Knights (Ed.): **Neuropsychology of Learning Disorders.** MTP, 1977. £13.95.

Martin Kohn: **Social Competence, Symptoms and Underachievement in Childhood: A Longitudinal Perspective.** John Wiley, 1977. £12.55, $21.30.

Catherine Lee: **The Growth and Development of Children (2nd Edn.).** Longman, 1977. £2.50.

Denis Leigh, C. M. B. Pare and John Marks (Eds.): **A Concise Encyclopaedia of Psychiatry.** MTP, 1977. £6.95.

Gerald I. Lubin, James F. Magary and Marie K. Poulsen (Eds.): **Piagetian Theory and the Helping Professions – 5th Annual Conference.** University of S. California, 1976. $8.50.

Gerald I. Lubin, James F. Magary and Marie K. Poulson (Eds.): **Piagetian Theory and the Helping Professions – 4th Annual Conference.** University of S. California, 1975. $7.50.

James F. Magary, Marie K. Poulsen, Philip J. Levinson and Priscilla A. Taylor (Eds.): **Piagetian Theory and Its Implications for the Helping Professions. Emphasis: The handicapped child – 6th Annual Conference.** University of S. California, 1977. $10.00.

Jean Marzollo and Janice Lloyd: **Learning Through Play.** Penguin, 1977. 80p.

Roger McAuley and Patricia McAuley: **Child Behaviour Problems: An Empirical Approach to Management.** Macmillan, 1977. £7.95 hardback, £3.95 paperback.

Peter Mittler (Ed.): **Research to Practice in Mental Retardation: Care and Intervention.** University Park Press, 1977. £17.50.

Frederick Mortimore: **Making Movement Fun.** NSMHC, 1977. 50p.

John and Elizabeth Newson: **Perspectives on School at Seven Years Old.** Allen & Unwin, 1977. £6.95.

K. Daniel O'Leary and Susan G. O'Leary: **Classroom Management (2nd Edition): The Successful Use of Behaviour Modification.** Pergamon Press, 1977. $15.00 hardback, $7.95 paperback.

Daniel N. Osherson: **Logical Abilities in Children.** John Wiley, 1977. £11.20.

Jean Piaget: **The Moral Judgment of the Child.** Penguin, 1977. £1.95.

Jean Piaget: **The Origin of Intelligence in the Child.** Penguin, 1977. £1.95.

Anne D. Pick (Ed.): Vol. 10 **Minnesota Symposia on Child Psychology.** University of Minnesota Press, 1976. $14.50.

Marie K. Poulson, James F. Magary and Gerald I. Lubin: **5th Annual Conference Piagetian Theory and the Helping Professions.** University of S. California, 1976. $8.50.

Arthur S. Reber and Don L. Scarborough (Eds.): **Toward a Psychology of Reading: The Proceedings of the CUNY Conferences.** John Wiley, 1977. £13.00, $22.00.

H. R. Schaffer: **Studies in Mother–Infant Interaction.** Academic Press, 1977. £14.80, $29.00.

Lorna Selfe: **Nadia: A Case of Extraordinary Drawing Ability in an Autistic Child.** Academic Press, 1977. £6.25, $12.30.

Jalal Shamsie (Ed.): **Experience and Experiment.** Can. Ment. Health Ass., 1977. $8.50.

Mary M. Sheridan: **Spontaneous Play in Early Childhood from Birth to Six Years.** NFER, 1977. No price given.

Margaret Smithson: **Lesley – The Child We Chose. Foster Care of a Mongol Baby.** NSMHC, 1977, 50p.

Catherine E. Snow and Charles A. Ferguson: **Talking to Children.** Cambridge University Press, 1977. £8.00.

Paul D. Steinhauer and Quentin Rae-Grant (Eds.): **Psychological Problems of the Child and His Family.** Macmillan, 1978. £10.00.

Daniel Stern: **The First Relationship Infant and Mother.** Fontana/Open Books, 1977. £1.25.

Brian Stratford (Ed.): **First Annual Stanley Segal Lectures.** Trinity and All Saints Colleges, 1977, 25p.

John Swain: **Spit Once for Luck.** Paul Elek, 1977. £3.50.

J. M. Tanner (Ed.): **Developments in Psychiatric Research.** Hodder & Stoughton, 1977. £7.95.

Barbara Tizard: **Adoption: A Second Chance.** Open Books, 1977. £3.95.

John F. Travers: **The Growing Child.** John Wiley, 1977. £8.00, $13.75.

Nicholas Tucker: **What is a Child?** Fontana/Open Books, 1977. £1.00 paperback.

Tom Wakefield: **Special School.** Routledge & Kegan Paul, 1977. £2.25.

Jerry M. Wiener: **Psychopharmacology in Childhood and Adolescence.** Basic Books, 1977. $15.00.

ARI

J. Child Psychol. Psychiat., Vol. 19, 1978, pp. 301 to 302. Pergamon Press. Printed in Great Britain.

ANNOUNCEMENTS

The International Association for Child Psychiatry and Allied Professions will hold its 9th International Congress in Melbourne, Australia, 19–26 August 1978. The theme of the Congress will be "Children and Their Parents in a Changing World".

Inquiries and proposals regarding the scientific program should be addressed to:

PETER B. NEUBAUER,
Secretary-General,
International Association for Child Psychiatry
and Allied Professions,
59 East 73rd Street,
New York, NY 10021, U.S.A.

Inquiries regarding travel arrangements from the United States, Canada, Europe, etc., should be made to:

Foreign Tours, Inc.,
1140 Avenue of the Americas,
New York, NY 10036, U.S.A.
Att. NAOMI KABAK, Director
Congress and Convention Services.

THE CHICAGO INSTITUTE FOR PSYCHOANALYSIS
and
THE PSYCHIATRIC AND PSYCHOSOMATIC INSTITUTE OF
MICHAEL REESE HOSPITAL
are pleased to announce

THE JUDITH BASKIN OFFER PRIZE

An annual $500 prize for an original paper on the psychology of adolescence

Official rules

The Judith Baskin Offer Prize was established in memory of Judith Offer by her family, to encourage those who share her deep concern with the understanding of adolescence and the treatment of emotionally disturbed young people. It is awarded annually to the author of an original, unpublished paper dealing with some aspect of the psychology of adolescence. Papers are judged for their clinical relevance, theoretical significance, and linkage to dynamic psychology. Authors may represent any professional discipline.

Papers must be written in English. They should be submitted in three copies, typed, double spaced, with 1 in. margins on white bond paper, $8\frac{1}{2} \times 11$ in. There is no restriction on length but papers should cover their subject completely and concisely. Each paper should include a title page, abstract, text, and references. The title page should include title, author's name and address, and current position.

The abstract should not exceed 300 words and should briefly summarize the findings and conclusions of the paper. References should be standardized, complete, and numbered consecutively as they appear in the text.

Deadline

Papers must be postmarked no later than December 31, 1978, and mailed to:

George H. Pollock, M.D.,
Institute for Psychoanalysis,
180 N. Michigan Ave.,
Chicago, IL 60601, U.S.A.

Judging

Papers will be judged by a committee of five representatives of the two institutions. The decision of the judges' committee will be final.

Winning papers become the property of the Chicago Institute for Psychoanalysis, and will be published in either the *Annual of Psychoanalysis*, or *The Journal of Youth and Adolescence*.

Receipt of all papers will be acknowledged, and winners will be notified by mail

For additional information, contact Dr. Pollock at the above address.

Supported by the Judith Baskin Offer Fund for Research and Education in Psychiatry.

separation experiences,
rhesus monkeys,
5 months later

NDE, R. A., LEIGHTON-SHAPIRO, M. E. and MCGINNIS, L. (1978) Effects of various
es of separation experience on rhesus monkeys 5 months later. *J. Child Psychol.*
chiat. **19,** 199–211.

mmary—Thirty-week old infant rhesus monkeys, living with their mothers in small
ups, were subjected to four types of treatment. Either the mothers were removed for
days, the infants remaining in the colony (M/R), or the infants were removed (I/R),
both mother and infant were removed and separated from each other (M–I/R), or
th were removed for 13 days but kept together [(MI)/R]. Control monkeys were left
the home groups. At 1 year data were collected in the home pens, and after mother
d infant had been removed to test cages. The data support the view that a period
separation between mother and infant can, but need not, have long-term sequelae.
e M/R infants, most affected in the weeks following reunion, were also the most
ected at 1 year. Group differences in behaviour in the test cages suggested that
verse conditioning to the separation environment played an important role, though
s did not operate in precisely the same way on mothers and infants. It is emphasized
at the consequences of a separation experience are complex.

infants and children,
behavioral development,
XXY chromosome

LZER, S., WOLFF, P. H., BOWEN, DOROTHEA, SILBERT, ANNETTE R., BASHIR, A. S.,
RALD, P. S. and RICHMOND, J. B. (1978) A method for the longitudinal study of
avioral development in infants and children: the early development of XXY
ldren. *J. Child Psychol. Psychiat.* **19,** 213–229.

mmary—A method for recording, codifying and analyzing longitudinal data on
avioral development was presented as it was employed in a long-term develop-
ntal study of 13 XXY and eight control children in order to identify behavioral
racteristics that discriminated between the two groups. The XXY children fre-
ntly demonstrated developmental language deficits, which were manifested as
blems in expressive language skills and as learning disabilities. When compared to
controls, the aneuploid children also showed lower activity levels, were more mild
the energy content of their responsiveness, responded to novel stimuli more com-
nly by withdrawal, were more pliant in their social interactions and had difficulty
anizing their daily routines to conform to parental expectations. Distractibility

childhood autism,
Africa

LOTTER, VICTOR (1978) Childhood autism in Africa. *J. Child Psychol. Psych*
231–244.

Summary—Mentally handicapped children, mostly in institutions, were scre
five countries in Africa in order to explore the usefulness of Western criteria
recognition of childhood autism in developing countries. Some 1300 children we
of whom 30 had some autistic-like behaviour. Nine were autistic according to
criteria. Autistic behaviour was found in speaking and non-speaking childre
grades; in sex ratio, occurrence of epilepsy and social background the Africa
was broadly comparable to Western groups. Behavioural comparison with a
sample suggests some prominent features of the syndrome are very uncom
Africa. Implications for recognition and classification are discussed.

temperament (3 to 7 years),
behavior rating scale

MCDEVITT, SEAN C. and CAREY, WILLIAM B. (1978) The measurement of tempe
in 3–7 year old children. *J. Child Psychol. Psychiat.* **19,** 245–253.

Summary—This paper reports the initial development of the Behavioral Style
tionnaire (B.S.Q.) for determining temperamental characteristics in 3–7 ye
children. The 100 item questionnaire was based on the conceptualization of
et al. (1963) and standardized on 350 children in a pediatric practice. It can b
pleted by the parent in about 25 min and scored in about 15 min. Test–retest rel
and alpha reliability are both satisfactory, 0·89 and 0·84, respectively. Preli
evidence of construct and external validity is presented. The instrument should p
more objective and organized temperament data for research and clinical purpos

autism,
recognition of faces

ANGDELL, TIM (1978) Recognition of faces: an approach to the study of autism. *Child Psychol. Psychiat.* **19,** 255–268.

ımmary—Two age groups of normal, autistic and subnormal children were tested for ·ir ability to recognize the faces of peers from isolated facial features and inverted otographs. The normal and subnormal subjects found the upper regions of the face st helpful for identification, whereas the younger autistic children found the lower tures more helpful. The older autistic children showed no specific reliance on any one a, but were found to have error scores as low as those of the younger autistic children on recognition of lower parts and error scores as low as the controls on recognizing per portions. The results are discussed and are found to favour a hypothesis in which autistic child's familiarity with the mouth and/or eye areas is related to a cognitive icit which affects the processing of both verbal and non-verbal interpersonal com-nication.

Scottish Children's Hearings, psychiatric disorder,
community agencies, conduct disorders,
family disturbance

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mmary—Children referred for psychiatric reports by the Scottish Children's arings were compared with other children known to the Reporter and with anti-ial children referred to psychiatrists from other sources. The first group of children e characterized by the severity of their symptoms and family disturbance. They ered from other conduct disordered children referred to psychiatrists in being older, taining a greater excess of boys and, in the case of boys, more often coming from upted families with substitute fathers rather than single mothers. Associated features e very high rates of itinerant employment, criminality, excessive drinking and chiatric pathology among the father figures and very large sibships, especially ong the girls.

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TRIBUTE TO EMANUEL MILLER

JACK KAHN*

"*There were giants in the earth in those days*" (Genesis VI, 4)

EMANUEL MILLER was the first of that generation of psychiatrists who made child psychiatry their profession and who made the profession of child psychiatry. He was among those who were drawn to this speciality through a social and spiritual consciousness. In a previous generation they would have been priests.

My contribution at this meeting in his memory† is to trace some of the biblical, literary and artistic sources of his ideas. It was no accident that the child guidance clinic in which Emanuel Miller found his ethic was in the East End of London which has seen—and still sees—successive waves of immigrants who brought a culture from other lands into an area steeped in the history of the English people. This clinic was established in 1927 by the Jewish Health Organization of Great Britain with the help of the London County Council and its Care Committee, and the Child Guidance Council.

There was a Jewish community in the neighbourhood, which had carried its past in the luggage strapped on the backs of the people in their journeys from country to country—a literature and an ideology contained in the religious writings. At that particular time a new feature, in the haste to adapt to the pressures and attractions of a new culture, was the diminishing influence of the rabbis. This feature, existing here in intense degree in a highly mobile population, existed also in some lesser degree in the host culture in the form of what has been called the generation gap. The standards and values of the pre-1914 adult world underwent a revolutionary change in the post-war period. The immediate present was sharply divided from a past which was unknown to the young, and from a future which had not yet taken shape. Those to whom a cultural heritage was something to value found it possible to feel pride in the performance of the present. Others felt an emptiness. When the past has been killed there is a sense of loss which is even greater when there is no mourning for what had never been valued. In the 1920s, the time was ripe for a search, through psychiatry, for comfort as well as for cure.

The need created the men who came forward to supply it. If we need a title for this tribute: "There were giants in the earth in those days" (Genesis VI, 4).

What Emanuel Miller gave to Child Guidance, and to the community that he served, was an historical and cultural dimension, but at no stage did he as a physician neglect the physical and constitutional aspects of personality. In *Types of Body and Mind* (Miller, 1926) he is described as Neurologist to the Ministry of Pensions, and clinical "psychologist" (*sic*) to the West End Hospital for Nervous Diseases. He brought his knowledge of Anatomy, Physiology and Psychology to the study of the rich and strange personalities of John Bunyan, Charles Baudelaire and John Milton, and he used their writings as evidence of their thinking. On Milton's blindness, he states, "We are faced with a great moral conflict coloured by the struggle with a physical infirmity which places Milton on the plane of Job".

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*29 Antrim Mansions, London NW3.

†Meeting of the Association for Child Psychology and Psychiatry, 2 November, 1977.

Literature and art came to his mind when attempting to understand individual and family behaviour. By 1929, he had recorded, along with Noel H. M. Burke, some of the cases in his Child Guidance Clinic which received its first patient on November 21st 1927. The title of that paper (Burke and Miller, 1929) was (typically) "Child mental hygiene; its history, methods and problems". He refers to the way that scientific attitudes were coupled to philanthropy—the psychological, social, ethical, racial and, even, political ideas converged.

His quotations came direct from his literary sources. At this stage these included Locke, Rousseau, Froebel, Montessori and, in addition to Freud he quoted Jung, Adler, Kafka and Piaget. Surely Miller was among the first in this country to give Piaget's developmental approach a place alongside psychodynamics!

At this stage, also, he referred to the relationship between clinic and the living network of the child, family and community. Social agencies, already in the field, had social, religious and class bias, but he recognized that they had to be met with genuine sympathy and cooperation. Recruiting their aid was less difficult than he expected. Perhaps it was his talent to work on the boundaries between professional scientific disciplines and ideologies that made this possible.

Constantly, Miller was invited to contribute to multi-professional symposia. In 1932, in "Science today and tomorrow" (Miller, 1932), his contribution appeared alongside those of the Astronomer Royal and Professors of Anthropology, Chemistry and Biology. Miller's subject was psychology and he said, "Although Freud has laid bare the illusory elements in religious attitudes and practices of man, he has not disposed of that rapport with the world—that sense of communion with nature which has been described as the Religious Experience. Psychology, for its complete task, must accept the symbolic expression of both Science and Art".

In 1935, he wrote on "Psychology and modern problems" (Miller, 1935) drawing metaphors from two thousand years of the history of Chinese porcelain. He made a comparison between the Gothic vault and the skyscraper. He described images created by Picasso, Braque and Proust, and he referred, in passing, to Joyce on the stream of consciousness.

His writings abound in aphorisms of his own: "Where there is bad theory there is bad practice"; "Poetic diction is fine for poetry but science cannot live on metaphor alone".

In 1938 he wrote *The Generations* (Miller, 1938) alluding, no doubt, to "This *is* the book of the generations of Adam" (Genesis V, 1). Modern psychology, he stated, has laid bare the old Adam in each of us. "The work of both Freud and Jung suggests that within the individual, and the races of man, are the symbols of ancient culture and the deep expression of man's upward thrust embodied in art and religion".

I came to know Emanuel Miller personally late in his life through his part in the formation for the Association of Child Psychology and Psychiatry. Meetings of the Association in London drew me regularly into a contact with him, which continued at international meetings which he attended even after he had begun to be crippled with rheumatism. He persevered with his speaking, his writing, and his courteous and generous influence on his colleagues and students.

When he edited *Foundation of Child Psychiatry* (Miller, 1968, he quoted on the title page a saying from the Ethics of the Fathers: "Speak not of your children but of your builders". It is taken from a small treatise within the Talmud: a collection of maxims and aphorisms of the rabbinical sages. It is included in the Jewish Prayer Book in Hebrew and English translation. Miller had quoted this saying once before in *The Generations* as being applicable to the growing family. The point of this saying is made more cogent by a play on words. The Hebrew word for children has a sound similar to the word for builders. The children are the builders. The child gives birth to the parent who cannot be a parent without having a child, and the family is built through the child. Similarly, the patient is the builder of the therapist.

The same theme occurs in the Gospel according to St. Matthew (III, 9): "And think not to say within yourselves, We have Abraham to *our* father; for I say unto you, that God is able of these stones to raise up children unto Abraham". I was able to recognize the same pun between children and stones in a Hebrew translation of the New Testament, owing to the accident that, at one time, I was thought to be a suitable target for the attention of the Society for Distributing the Holy Scriptures to the Jews. I received, unasked, a copy of the New Testament in Hebrew and English. How the pun survived the various translations I do not know. The spoken language of the time was Aramaic. The New Testament was written in Greek in which the words have no similarity. The pun in the spoken language of the time was inevitably lost in the translation into the Greek testament (and for that matter in the English versions), but whoever it was that was responsible for providing the translation *into Hebrew* has taken the trouble to restore the play on words.

This theme prompts the thought that Child Psychiatry has many mansions, and Emanuel Miller helped to prepare some of the foundations and was one of the architects and builders. The stones are among his children, taking part in a living structure which is a storehouse of culture. Emanuel Miller represented a vastness of culture not just for his generation but also for ours. His erudition, which enriched his thought and understanding, never became a barrier between him and the least educated patient or the youngest student—because he himself had a natural humility.

He had a sensitivity to the points of change in professional practice. On the multi-disciplinary approach, he stated (Miller, 1965) that it was a fairly modern attempt to correct the errors and prejudices of individual observations in subject matter which derived from a variety of sources. Exciting new ideas are not achieved without passing through some turmoil. In his address to the Inter-Clinic Conference of the National Association for Mental Health in 1965 he surveyed some of the progress:

> ". . . child guidance in the early thirties had a hard struggle, not only for status, but for recognition. It was indeed the Iron Age, and it needed the help of extra-medical philanthropy to give money to establish clinics and to give opportunities for training."
>
> ". . . our clinic was established in a depressed area during the very worrying social and economic crises of 1928–1932. There was unemployment, hunger,

housing squalor, fathers idle and despairing, mothers seeking work and at the same time harassed by growing families. Juvenile delinquency was part of our new vocabulary. We were therefore confronted not only with problems of intraphysic origin but with psychological problems following on profound social stress. Those who today claim that family psychiatry and guidance is a recent development and revelation should step back with me into the late twenties and realise that we were already aware of the dynamics of families in their psychological and in their social dimensions."

His final message was that it was the triple structure of the clinic which brought together persons trained in different fields who learned one another's language. The language lives on.

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THE EAST LONDON CHILD GUIDANCE CLINIC

George Renton*

I have been asked to talk about the East London Child Guidance Clinic which was established in 1927 under the Honorary Directorship of Emanuel Miller. It was the first Child Guidance Clinic in the country, according to the Jewish Health Organisation the first in Europe, and was opened in Bell Lane, E1.

The Jewish Health Organisation of Great Britain was particularly active in the East End of London where there was a large immigrant population, both first and second generation, who had come from Eastern Europe since the late nineteenth century. Since the early 1920s they, I quote from one of their documents, "viewed with apprehension the growth of the nervous disorders amongst the children of this thickly populated district. Not only is there seen to be an increase of psychological maladjustment in home and school producing emotional disturbance and educational disorders, but an increase in disorders of behaviour from simple refractoriness to delinquency."

Money was raised and three rooms were made available in the Jewish Free School in Bell Lane as a temporary measure, a temporary measure, which, like many other temporary measures, was to last until the early years of the second world war when after a short closure the clinic was rehoused, again temporarily, in a converted first floor ward in The London Jewish Hospital, Stepney Green, E1. This second temporary measure was to last for nearly 35 years.

Thus, in October 1927 the doors were opened for business. The clinic was a few hundred yards from both Liverpool Street Station and Aldgate pump, a stone's throw from Spitalfields Market and a whisper away from the childhood home of Emanuel Miller. The family lived in a Huguenot house, erstwhile the home of Hughlings Jackson. I explored the area a few days ago; there is no longer a school in Bell Lane, the whole area being busy with the garbage of Spitalfields Market. I wondered how nostalgic it had been for Emanuel Miller returning to his childhood haunts at the age of 34 and what memories might have been his.

Associated with this new venture, someone of great drive, was Miss Clement Brown, a social worker who trained in Psychiatric Social Work in the United States. It was in 1921 in Boston, U.S.A., that the first child guidance clinic was founded and that with the help of the Commonwealth Fund many more were soon to open throughout the States. In the planning of the East London Child Guidance Clinic the Jewish Health Organisation had the co-operation and advice of the recently formed Child Guidance Council. The notion of a co-operative venture of psychiatrist, psychologist and sociologist was accepted, school doctors were involved and promised a supply of cases, as also did the local Care Committee of those days. So there came together two psychiatrists, Emanuel Miller and Noel Burke, a psychologist Meyer

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Fortes (now Professor) and psychiatric social worker Miss Clement Brown. Miss Clement Brown on loan, as it were, from the Child Guidance Council, left the clinic in 1929, I presume to carry on the Council work in 1929 and was succeeded by Miss Beatrice Robinson.

By the end of December 1927, working four sessions a week, 17 cases had been referred and seen. I have a report of the time that says that the team method to which they were new was "working well, and harmoniously". Co-operative relationships had been established with local social organizations, Care Committees, etc.

From the beginning the routine was to hold a preliminary case conference of the referring agency, the psychiatrist and the social worker to consider and promulgate the most appropriate procedure.

Later, as necessary, a full social history, preliminary psychological reports and a psychiatric interview were completed. A case conference was then held to which all those interested in the child were invited. "These" . . . (I am quoting Emanuel Miller) "not only allow for frank discussion between members of the staff, school teachers and others, but afford a striking means of educating doctors, social agencies and teachers in this new approach to child problems". Some 10 years later there had been a considerable reduction in the number of case conferences due to the pressure of the work.

There were soon some voluntary social workers to help. Research work was instituted and in 1933 the first research psychologists were appointed. Professor Wilhelm Peters was investigating the relationship between types of eidetic imagery and personality and also the relationships between nail-bed capillary structure and intelligence. Professor Meyer Fortes conducted research into the intelligence of Jewish and non-Jewish children. I should have said earlier that about half the children seen were non-Jewish. This research was in the context that there had been a serious and widely publicized claim by an eminent scientist that Jewish children were mentally inferior to English children and that in consequence alien immigration was having a harmful effect on the country. Such were the scape-goating politics of the time, reminiscent of current controversies in the field of intelligence and race.

Sir Cyril Burt and Sir E. Farquar Buzzard were two well-known professionals associated with the clinic and were honorary consultants. One of the members of the Committee was Dr. Hugh Gainsborough, formerly physician to St. George's Hospital, who has a great interest in psychosomatic problems and to whom I am greatly indebted for some of the material I have gathered. I met him at his home recently. He is a real gentleman of 83 and close friend of Emanuel Miller down the years. He would have been delighted to have been here tonight but difficulty in travelling prevents him. I regret my time is limited and that I am restricted to the history of the clinic. Although I cannot share with you all the reminiscings of Hugh Gainsborough, I feel I must share some. He too, lived below the church in Spitalfields and was a childhood fried of Emanuel Miller; a friendship that lasted until Emanual Miller's death in 1970. They played together and visited each other's houses. Emanuel Miller's father was a furrier whose shops were behind the house. I asked Hugh Gainsborough if he remembered any games they played together . . . his first memory was of reading together and laughing a lot; he told me that they sometimes played in the streets and I asked if they ever got up to mischief. His reply was to speak of the strictness of their fathers! However, let us continue with the history of the clinic.

Fame soon spread and all members of the staff were lecturing and advising others. Emanuel Miller had a series on B.B.C. I think, called "How the mind works in the child". There were many, many visitors to the clinic including in 1931, some ten County Medical Officers of Health as a group. In 1936, there came one Alfred Adler and I quote from a minute of his visit, "The celebrated psychologist Dr. Alfred Adler demonstrated his methods of case technique and diagnosis in the actual presence of the patient and parent. This was attended by a very large audience which was greatly interested in both Dr. Adler's personality and methods".

In the first 5 years there were nearly 600 referrals and it has been very interesting to look at these figures. I will not burden you with too many actual percentages and so on. The pattern of referrals from different agencies was much the same as today; over half were from educational sources. Most were local, from what are now the boroughs of Tower Hamlets and Hackney, with a smattering from other London areas and the odd one from as far afield as Southend-on-Sea and Sheffield.

Behavioural disturbances accounted for the majority, as they do today. Presenting symptoms, problems, whatever you like to call them, were similar, with one exception which would be unusual today and is socially significant, that of masturbation, of whom there were several. One other significant difference was the paucity of truanting, nine cases only, that is less than 2%. Did school refusal (phobia) as we now know it not exist? . . . In those 5 years there were 4000 clinic attendances and 4000 home visits, with a 25% failure rate of clinic attendances, which is very much better than now.

With regard to management the emphasis seems in the early years to have been in terms of social work and environmental change. One-fifth of the children referred were placed away from their homes, the majority in Approved Schools, others in Orphanages, Voluntary Training Ships, mental deficiency institutions and foster homes. It is very interesting to note that foster home placement and the selection of foster parents was the responsibility of the clinic. The follow-up work with the foster parents was intensive and ongoing, and makes me wonder about today's system of much-divided responsibility. Some of the names of the social agencies of that time are a microcosm of social history in themselves: the Children's Holiday Fund, the Church Army, the Invalid Childrens' Association, the Jewish Association for the Protection of Women and Girls, The Presbyterian Settlement, the Spanish and Portuguese Board of Guardians.

Social work was very much to the fore, and work with families was regarded as very important. I will quote another report of Emanuel Miller: "Experience has stressed the importance of understanding the role of the family, the grand-parents, and uncles and aunts play in the problems of the child. The grandmother is for example often found to be a potent force, perhaps a hidden one in the family affairs and until her attitude to them is disclosed it may be found impossible to make headway in the elucidation and removal of the child's difficulties". Surely here are the precursors of family therapy which Emanuel Miller spelt out more clearly later in his book *The Generations* and in his work at the Tavistock Clinic.

By 1936 the accommodation problem in Bell Lane was almost intolerable. There were 50 cases on the waiting list at the beginning of the year and 274 new cases were referred during the year. It was thought that being housed in a school gave the impression that the clinic was maintained by the educational authorities. There were in fact financial problems, for although since 1932 recognized by the University of London, the clinic did not receive University monies for training because of the unsuitability of the premises. A plan was made to raise £6000 to open a building to house all the activities of the Jewish Health Organization. This, however, was not to be, due to the outbreak of war. Here are two interesting vignettes of the time; firstly the additional financial problems caused by the reduction of the L.C.C.'s grant from Sunday Cinema openings from £20 to £2 a week and secondly that the police had reduced their permitted number of flag days to one, this no doubt connected with the Blackshirt troubles of those times.

By 1937 the staff, mostly part time and honorary, were six psychiatrists, five psychologists, four social workers, three play therapists, one remedial teacher, one research psychologist and two clerical assistants.

As I have mentioned, there was a short closure followed by the 35 years in the backwoods of the London Jewish Hospital and it was a bare 2 months ago, after half a century, that the temporary accommodation problems were resolved by the move to new premises at the Northern end of the Isle of Dogs close to the confluence of the East and West India Dock Roads and Commerical Road.

Through my researches, through the dust and dry browning paper and fading ink has come a sense of devotion and concern and a sense of community that for me, is extraordinary. Despite the rickets, erysipelas, prostitution, sweat shops, bawdy houses, eight shillings a week rents, five and six to a room, there is a thread of belongingness that is absent in most parts of the area today, the days of high-rise flats and acres of desolate half-demolished housing.

Also as a thread throughout has been the notion that the aetiology of a child's problems is multi-factorial and that there is a need for a many-faceted approach to assessment, now subsumed under the catch phrase "multi-disciplinary".

I have endeavoured to find the first referral to the clinic but have failed. However I have found No. 14 referred just before Christmas 1927, a boy of 10 with enuresis and behavioural problems, whose father was a licensed match seller and also, it seems, a rogue. Ernest was found foster parents and I would like to finish by reading his letter dated the 30th July. 1928.

"Dear Doctor Miller.

> I am doing as you asked me to do and I am living at the above address. Please would you mind sending me letters as I have only received one since I have been here. I get good dinners every day and I get a bit home-sick at night when I go to bed. We have gardens and fields to play in. I am waiting for your letter, please send it.
>
> Yours truly,
>
> Ernest E."

I hope that our new home has been appropriately named in his memory—"The Emanuel Miller Centre for Families and Children".

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MATERNAL SEPARATIONS IN RHESUS MONKEYS WITHIN A SOCIAL CONTEXT

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INTRODUCTION

MATERNAL separation studies in non-human primates have revealed a number of factors influencing individual differences in the infants' response to loss of mother: Kaufman and Rosenblum (1969) and Kaplan (1970) showed that if monkey infants were cared for by others in their mothers' absence and easily related to others, the depression response to maternal loss was not seen. The infants' ability to relate to others, and also the tendency for group companions to look after separated infants in a way that did not decrease the quality of caretaking behaviour received by the infants, seemed to depend on the social organization of the species of monkey concerned and, possibly, on the degree of kinship between members of the social group (Rosenblum, 1973). Schlottman and Seay (1972) and Spencer-Booth and Hinde (1971), found that in irus and rhesus macaques, respectively, infants were not monotropic in their attachments and did try to relate to others in their mothers' absence, but their group companions were usually indifferent or inconsistent in the attention they gave the infants. Thus the infants suffered a change in the quality of care received on loss of mother.

Spencer-Booth and Hinde (1971) found that the nature of the mother–infant relationship before separation was an important factor affecting the rhesus monkey infants' response to maternal loss. Infants that were the most distressed, tended to have more "tense" pre-separation relations with their mothers. The ease with which the mother–infant relationship was re-established on reunion was also found to affect the infants' rate of recovery from separation. Infants that had more "tense" relations with tehir mothers before separation were not only the most distressed during separation, but also had the greatest difficulty in re-establishing the mother–infant relationship on reunion and, consequently, took longer to recover from the effects of separation.

Hinde and Davies (1972) found that the infants' surroundings during separation may also be an important factor. Rhesus monkey infants left in familiar "home" surroundings with group companions, while mother was removed, showed marked depression 24 hours after their mothers' removal. Infants removed from their groups to strange surroundings for separation (mother left in the group) were more alarmed and protested longer than infants left "at home". The onset of depression was delayed and appeared a week or so after removal. On reunion with their mothers,

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infants left "at home" were clinging and demanding. Infants returned to their "homes" were subdued and quiet. The latter re-established relations with their mothers more easily than the infants left "at home" and recovered sooner, even though separation seemed to have been a more frightening experience for them.

The findings of Hinde and Davies focused on the problem of carrying out maternal separation experiments on socially-living mother–infant pairs. Removal of either the mother or the infant or both for maternal separation obviously necessitated separating them from group companions also. Within a social group of monkeys, inter-individual relationships are finely balanced, and disruption to any one of these relationships affects all of them. The mothers occupy definite social positions within their groups. They actively maintain these positions in their daily behaviour in various subtle, and often covert, ways. To remove the mothers for a period of time, therefore, would present them with the problem of having to re-establish themselves within the group on reunion, as well as re-establish relations with their infants. Such mothers could not devote their entire attention to their infants on reunion, therefore, and the mother–infant relationship would take longer to be re-established. This may account for the longer recovery time of infants left "at home". When infants were removed from their groups for separation and their mothers left "at home", the mothers were wholly attentive to their infants on reunion. The infants did not re-establish relations with group companions until the mother–infant relationship was re-established. This was accomplished with relative ease as the mothers were even more attentive than they had been before separation.

It seemed necessary at this point to try to tease apart the effects of the infants' surroundings during separation and disturbance to their mothers by removal from the social group. It was apparent from the Hinde and Davies study that infants whose mothers were not disturbed by removal recovered faster from separation than infants whose mothers had been so disturbed. However, the infants' surroundings during separation in these two cases had been very different. This factor may also have influenced their behaviour on reunion, and hence their mothers' response to them. The next step was to remove both mothers and infants from their social groups for separation. If disturbance to the mothers was the all-important factor, then these infants would be as disturbed, if not more so, than the infants left "at home". If the infants' surroundings during separation affected their behaviour on reunion, such as to modify their mothers' behaviour to them, then these infants would be less disturbed than those left "at home". If both factors operated, then these infants would likely be more distressed than those whose mothers were left "at home", but less distressed than infants (only) left "at home".

In a study such as this, which focuses on the effects of removing individuals from their social groups the results will be affected by individual differences resulting from the unique position and social relations each mother–infant pair has within the group. A detailed analysis was carried out, therefore, on the social interactions of both mothers and infants. The effects of the mothers' social status on that of their infants', as well as on the mother–infant relationship and on their behaviour on reunion with group companions, were determined. The social demands made on returning mothers and infants were also assessed.

MATERIALS AND METHODS

Subjects

The rhesus monkeys studied, lived in social groups. Each group consisted of one fully adult male, three to four adult females and their young of varying ages. Seven mother–infant pairs were separated when the infants were 30–32 weeks of age. The experimental group consisted of three male and four female infants.

Housing

There were six groups in all, and each group lived in an outside cage 548 × 243 × 246 cm, which connected with an inside room 185 × 133 × 239 cm. The cage situation is described in detail elsewhere (Hinde and Rowell, 1962). During separation the infants were housed in an inside cage 82 × 75 × 103 cm in an isolation room about 50 m from the main colony. The infants were in visual and tactile isolation from other monkeys. Their mothers were kept in cages 60 × 60 × 80 cm, and were not observed during separation. The mothers could not see or hear their infants.

Experimental procedure (*Table* 1)

Observations were of the following types:

(a) *Infant activity/mother–infant watches* (A/MI). These watches commenced at 10.00 hr and continued until 2 hr of activity had been collected on the infants, i.e. until the infants had been off their mothers for 2 hr, or until 14.30 hr, whichever happened sooner. Interactions between mothers and infants were collected simultaneously with infant activity.

(b) *Maternal activity*. Mothers' activity was recorded from 10.00 hr to noon on the days they were taken.

(c) *Social interactions*. Six hours of social data were collected throughout the week between 09.00 and 13.00 hr on mothers and infants. Two hours of social data were taken between 10.00 and 12.00 hr on days 17, 18 and 21 on mothers and infants.

Statistical analysis

Changes in measures between different experimental periods were assessed by the Friedman Two-Way Analysis of Variance Test (two-tailed) and where these changes were found to be significant, they were assessed further by the Wilcoxon Matched-Pairs Signed-Ranks Test (two-tailed), (Siegel, 1956). Relationships between measures were assessed by the Spearman Rank Correlation Coefficient Test (one-tailed) (Siegel, 1956). To determine whether correlations between measures occurred by chance the Homogeneity of Correlations Test (two-tailed) was applied to these correlations (Kraemer, 1975). Comparisons between the different types of separation experiments were assessed by the Mann–Whitney U-Test (two-tailed) (Siegel, 1956).

Definitions of behavioural measures

The measures used here have been defined more fully in Hinde (1969) and Spencer-Booth and Hinde (1971).

Table 1. The experimental time-table

Group	4 weeks before pre-sep week	2 weeks before pre-sep week	Pre-separation week			Days of the post-reunion period							
			Day 1	Day 2	Day 3	17	18	19	21	23	30	37	44
M/R (Spencer-Booth and Hinde, 1971)			A/MI (pre-sep mean days 1–3)	A/MI	A/MI	A/MI	A/MI (mean days 18–23)	A/MI	A/MI	A/MI	A/MI (mean days 30–44)	A/MI	A/MI
I/R (Hinde and Davies, 1972)			A/MI (pre-sep mean days 1–3)	A/MI	A/MI	A/MI	A/MI (mean days 18–23)	A/MI	A/MI	A/MI	A/MI (mean days 30–44)	A/MI	A/MI
M-I/R (McGinnis, 1975)			A/MI (pre-sep mean days 1–3)	A/MI	A/MI	A/MI	A/MI (mean days 18–23)	A/MI	A/MI	A/MI	A/MI (mean days 30–44)	A/MI	A/MI
	2 hr watch on mothers' activity	2 hr watch on mothers' activity	2 hr watch on mothers' activity before day 4			2 hr activity on the mothers on day 17 and on day 22					2 hr watch on mothers' activity in the final week		
	6 hr of social data on mothers and infants during the week	6 hr of social data on mothers and infants during the week	6 hr of social data on mothers and infants during week before day 4			2 hr social data on mothers and infants on day 17, day 18 and day 21. The mean of days 18–21 was used. Day 17 left as a separate total					6 hr of social data on mothers and infants during the final week		

The three pre-sep weeks give pre-sep mean weeks 1–3.
During the separation period, 2-hr activity watches were carried out on the infants on days 4, 5, 9, 12, 15 and 16.
A/MI, activity/mother–infant watches.

(i) *Measures of infant activity*

Locomotor activity. Overall activity—the number of box areas entered per half minute of the time the infants spent off their mothers. Degree of activity—the number of half minutes the infants entered more than five boxes, expressed as a percentage of the number of half minutes they entered more than one box.

Sitting (S%). The number of half minutes the infants spent sitting doing nothing as a percentage of the number of half minutes off their mothers.

Social play. Contact play—the number of half minutes the infants engaged in contact social play (R/T play) as a percentage of the number of half minutes off. Non-contact play—the number of half minutes the infants engaged in non-contact social play (A/W play) as a percentage of the number of half minutes off.

Distress calls. The number of whoo calls emitted when the infants were off their mothers were divided by the number of 100 half minutes the infants spent off their mothers.

(ii) *Measures of maternal activity*

Locomotor activity. Overall activity—the number of boxes entered per half minute of the time watched. The degree of activity was measured in the same way as for the infants.

Sitting (S%). The number of half minutes the mothers spent sitting doing nothing as a percentage of the number of half minutes watched.

(iii) *Measures of the mother–infant relationship*

Time off (%). The number of half minutes the infants spent off their mothers, as a percentage of the number of half minutes watched.

Relative number of rejections (R/A + M + R). The number of times the infants were rejected from making ventro-ventral (v-v) contact, divided by the number of times they were rejected plus the number of times they made v-v contact of their initiative (A) plus the number of times their mothers made v-v contact (M).

Infants' role in maintaining v-v contact (Mk_i–Bk_i). The proportion of times the infants made v-v contact of total makes of v-v contact by mothers and infants, minus the proportion of breaks of v-v contact by infants of total breaks by mothers and infants. If this index is positive, then the infants are primarily responsible for maintaining v-v contact (Hinde and White, 1974).

$>$ 60 cm (%). The number of half minutes the infants spent out of arm's reach (60 cm) of their mothers, as a percentage of the time they spent off.

Infants' role in maintaining proximity ($\% Ap_i - \% L_i$). The proportion of approaches (coming within 60 cm) by the infant of total approaches by mother and infant, minus the proportion of leaves (going over 60 cm) by infant of total leaves by mother and infant. If positive, the infants were responsible for maintaining proximity (Hinde and Atkinson, 1970).

(iv) *Measures of mothers' social interactions*

Time with others (%). The number of half minutes spent within 60 cm of others, as a percentage of the time watched.

Mother's role in maintaining proximity to others ($\%A_m - \%L_m$). This is defined in the same way as that for the infants' role in maintaining proximity to mother, but in this case refers to approaches and leaves by mothers to their group companions and by the latter to the mothers.

Grooming and huddling. The number of half minutes the mothers were groomed by others; the number of half minutes others were groomed by the mothers; the number of half minutes mothers sat in physical contact with others.

Threats and avoidances. The number of times mothers threatened others and were threatened by others. The number of times mothers avoided others and were avoided by others.

(v) *Measures of the infants' social interactions*

These were the same as for the mothers, except that time with others and infants' role in maintaining proximity to others referred to time spent with others, approaches and leaves by the infants to others and by others to the infants, when the infants were more than 60 cm from their mothers.

Social play. The number of half minutes in which the infants were engaged in contact and non-contact social play.

Solitary play. The number of half minutes the infants engaged in lone locomotor and manipulative play.

RESULTS

Mother–infant measures

There was evidence of a certain degree of "tension" in some of the mother–infant relationships before separation occurred. The infants with "tense" mother–infant relations tended to whoo-call the most, withdrew from play activities and seemed to be more dependent on their mothers.

Separation period (*Fig.* 1)

The infants showed considerable individual variation in their response to separation, but the overall response was one of marked protest, followed by the onset of depressed symptoms such as hunched posture, quiet, subdued behaviour and a lack of interest in their surroundings. Whoo-calling was more frequent in the separation period than in the pre-separation period ($P < 0{\cdot}05$). The increase in whoos on each day of the separation period from pre-separation levels was significant, with the exception of day 12 ($P < 0{\cdot}05$, days 4, 5 and 16; $P < 0{\cdot}02$, days 9 and 15). The infants also spent more time sitting doing nothing on each day of the separation period than before separation, with the exception of day 15 ($P < 0{\cdot}02$, days 4, 5, 9 and 16; $P < 0{\cdot}05$, day 12). The infants appeared to be hyperactive during separation, but differences in cage size prevented direct comparisons of locomotor activity with pre-separation levels.

The only measure to show significant changes within the separation period was time spent sitting ($P < 0{\cdot}01$). The infants spent less time just sitting as the separation period progressed from day 4 ($P < 0{\cdot}02$, days 5, 9 and 12; $P < 0{\cdot}05$, days 15 and 16).

Post-reunion period

On day 17, the infants were returned to their groups a few minutes after their mothers. The mothers and infants were reunited almost immediately upon the

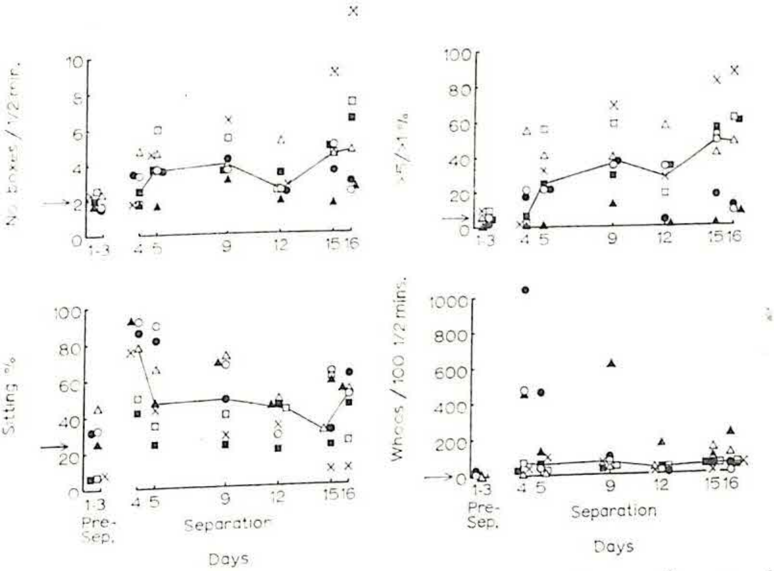

FIG. 1. Behaviour of infants during separation. ○ Rachel, ● Tilly, △ Spencer, ▲ Samantha, □ Kerry, ■ Ariane, × Trevor. The solid line joins the group medians for each period. The arrows indicate the group median in the pre-separation period. Top left—locomotor activity, measured by the number of boxes entered per half minute. Top right—activity when active. Bottom left—percentage of time watched spent sitting doing nothing. Bottom right—frequency of whoo-calling.

infants' release, and the infants spent most of the time on their mothers for the remainder of the observation period. As the post-reunion period progressed, the infants spent more time off their mothers, but they tended to avoid social interactions, and seemed subdued in behaviour. The readiness with which the infants left their mothers, depended to a great extent on the ease with which the mother–infant relationship had been re-established.

(a) *Changes in the infants' behaviour* (*Figs.* 2 *and* 3). The only measure to show significant change from pre-separation levels was non-contact play ($P < 0{\cdot}05$). The infants engaged in less non-contact social play on day 17 than before separation ($P < 0{\cdot}05$), but levels increased as the post-reunion period progressed ($P < 0{\cdot}05$, days 18–23 and days 30–44).

(b) *Mothers' behaviour*. The mothers engaged in more locomotor activity on day 17 than in the pre-separation period ($P < 0{\cdot}02$). There was a significant decrease in locomotor activity in later reunion stages from day 17, however ($P < 0{\cdot}05$, day 22 for overall activity; $P < 0{\cdot}02$, final week for degree of activity). The mothers also groomed others more on their return ($P < 0{\cdot}05$) and they were groomed by others more on day 17 than before separation ($P < 0{\cdot}05$). Levels of grooming decreased in later reunion stages from day 17 ($P < 0{\cdot}02$, day 12; $P < 0{\cdot}05$, final week).

(c) *The mother–infant relationship* (*Fig.* 4). The infants spent less time off their mothers on day 17 than in the pre-separation period ($P < 0{\cdot}05$), but the differences between later reunion stages and pre-separation levels were not significant. The infants spent more time off on days 30–44 than on day 17 ($P < 0{\cdot}02$). The infants were rejected less by their mothers on day 17 than in the pre-separation period

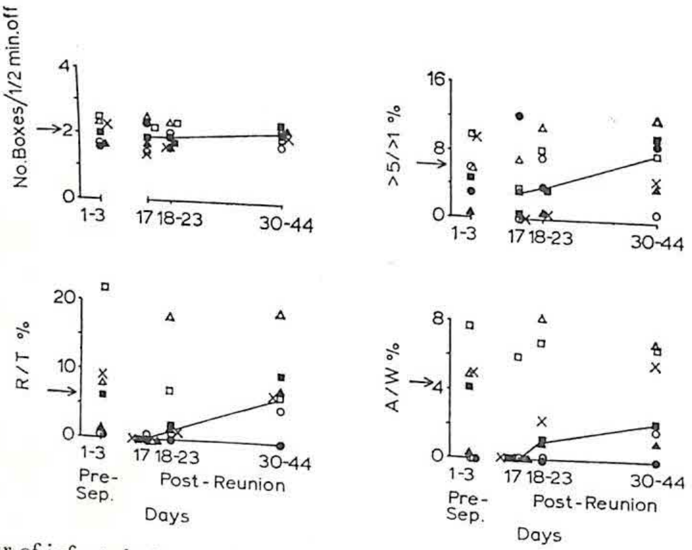

FIG. 2. Behaviour of infants before and after separation. Symbols as in Fig. 1. Top two measures as in Fig. 1. Bottom left—percentage of half minutes in which contact social play occurred. Bottom right—percentage of half minutes in which non-contact social play occurred.

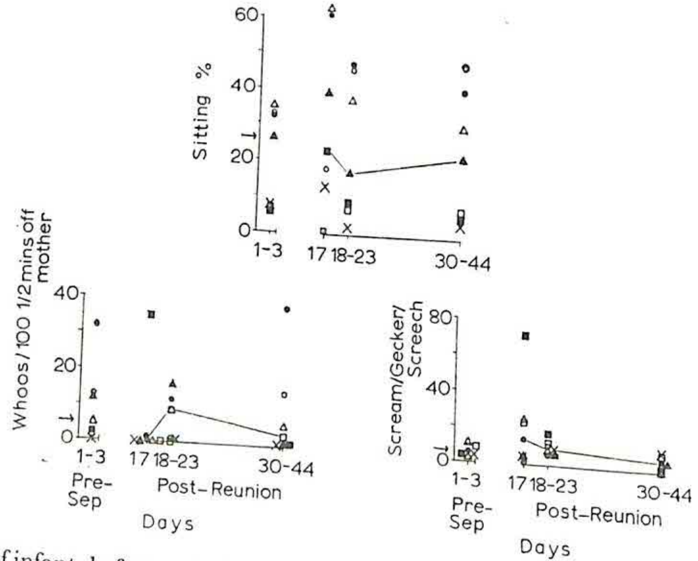

FIG. 3. Behaviour of infants before and after separation. Symbols as in Fig. 1. Top measure and bottom left measure as in Fig. 1. Bottom right—frequency of intergraded distress vocalization called scream/gecker/screechs.

($P < 0.02$), but as the post-reunion period progressed, the infants were rejected more than on day 17 ($P < 0.05$, days 18–23; $P < 0.02$, days 30–44).

Social interactions

Four of the mothers involved in these experiments were the lowest ranking females in their social groups. One mother was the highest ranking female in her

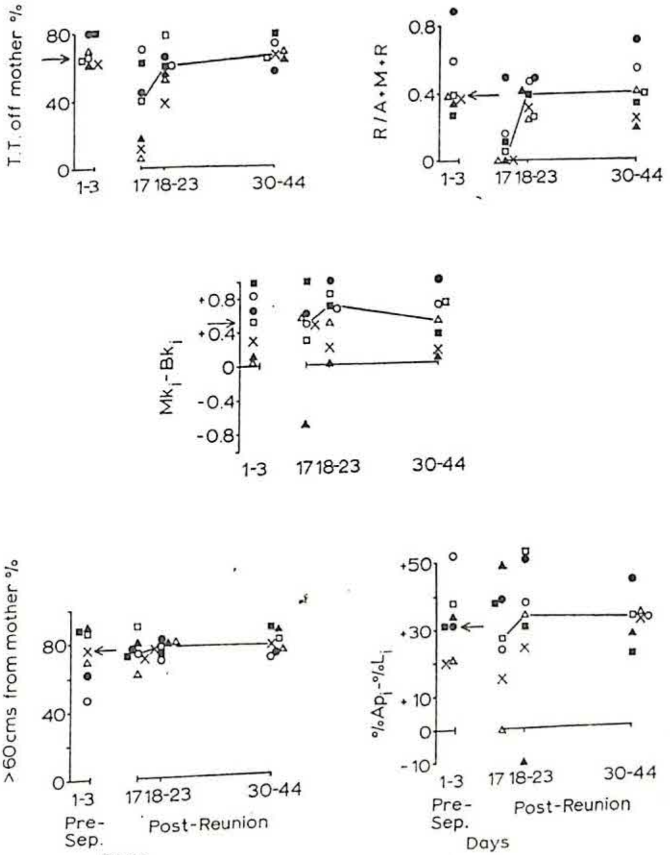

FIG. 4. Mother–infant interaction before separation and after reunion. Symbols as in Fig. 1. Top left—total time off mother. Top right—relative frequency of rejections. Centre—infants' role in maintaining ventro-ventral contact. Bottom left—proportion of time off mother spent at a distance from her. Bottom right—infants' role in maintaining proximity to mother when off her.

group and two mothers were of intermediate social rank. There was a tendency for the infants of the low-rank females to whoo-call the most and avoid social play before separation occurred.

Post-reunion period

(a) *Mothers' social interactions.* The mothers spent more time in proximity to others on their return to the group than they did in the pre-separation period ($P < 0{\cdot}01$). The increase occurred primarily on day 17 ($P < 0{\cdot}02$). Although the mothers groomed more during their activity watches, they groomed less over the post-reunion period than in the pre-separation period ($P < 0{\cdot}05$). The decrease was mainly on days 18–21 ($P < 0{\cdot}02$). There was an increase in grooming by the mothers in the final week from days 18 to 21 level ($P < 0{\cdot}02$). The mothers spent less time huddling to others in the post-reunion period ($P < 0{\cdot}01$), particularly on day 17 ($P < 0{\cdot}02$) and days 18–21 ($P < 0{\cdot}05$). In the final week, they spent more time huddling than in the early reunion stages ($P < 0{\cdot}05$, day 17; $P < 0{\cdot}02$, days 18–21). The mothers also avoided others less in the post-reunion period ($P < 0{\cdot}01$), especially on days 18–21 ($P < 0{\cdot}02$).

The social demands made on the returning mothers were mainly ones of increased intensity of interaction. The group companions were interested in the mothers and spent more time with them than before separation. The mothers were extremely passive towards their group companions on initial reunion with them, and only began to play a more active role in re-establishing social relationships in later reunion stages, when their infants were spending more time off them. Presumably, the mothers modified their social interactions to accommodate their infants in the early reunion stages.

(b) *Infants' social interactions*. The infants spent more time with others in the post-reunion period than in the pre-separation period ($P < 0{\cdot}05$), but the increase in each reunion period from pre-separation level was not significant on the Wilcoxon Test. The infants' role in maintaining proximity to others decreased in the post-reunion period ($P < 0{\cdot}05$), the decrease being marked on day 17 ($P < 0{\cdot}02$). There were significant decreases in social and solitary play in the post-reunion period ($P < 0{\cdot}001$, social play; $P < 0{\cdot}01$, locomotor play; $P < 0{\cdot}001$, manipulative play). The decreases were significant on day 17 and days 18–21 ($P < 0{\cdot}02$, in both cases). Social and manipulative play showed an increase from day 17 level as early as day 18–21 ($P < 0{\cdot}05$). In the final week, there were significant increases in all play behaviours from day 17 level and days 18–21 level ($P < 0{\cdot}02$, in all cases). The infants were avoided by others less on day 17 ($P < 0{\cdot}02$) and days 18–21 ($P < 0{\cdot}05$) than before separation.

Group companions were extremely interested in the returning infants and tried to initiate interactions with them when the infants were off their mothers. The infants seemed reticent in initiating interactions with others, however. By the final week, the infants had resumed social play activities and seemed to have recovered from the effects of their separation experience.

Individual differences in social relationships

Mothers that spent the most time alone (low-rank mothers) tended to have the most disturbed social relationships before separation and on reunion [i.e. they were threatened the most ($P < 0{\cdot}05$) and avoided others the most ($P < 0{\cdot}001$)], and they seemed to have the most difficulty in re-establishing social relationships. The mothers that spent the most time alone also had their infants on them the least ($P < 0{\cdot}05$) and at a distance from them the most ($P < 0{\cdot}05$) in all periods. They rejected their infants the most ($P < 0{\cdot}05$) and engaged in the most locomotor activity in all periods ($P < 0{\cdot}05$). Their infants whoo-called the most ($P < 0{\cdot}05$).

The infants of these low-rank (loner) mothers were the most distressed in all periods, and tended to have the most disturbed mother–infant relationships [i.e. they were rejected the most ($P < 0{\cdot}05$) and had to play greater roles in maintaining the mother–infant relationship ($P < 0{\cdot}05$)]. These infants tended to concentrate less on social relationships, in that they spent less time with others ($P < 0{\cdot}05$) and avoided others ($P < 0{\cdot}01$). The infants that were rejected the least by their mothers and, therefore, had "good" mother–infant relationships, were more sociable and had "good" social relationships. It seemed, therefore, that the most sociable mothers (those of higher social rank) had the most sociable infants, and these mothers and infants re-established the mother–infant relationship and their social relationships with greater ease than mothers and infants that spent most of their time alone and avoided others.

Comparisons between the different types of separation experiment (*Table* 2)

A thorough review of these different types of separation experiment has already been reported (Hinde and McGinnis, 1977). Three of those experiments will be compared briefly here: the Spencer-Booth and Hinde study (1971), involving removal of the mothers from the group for 13 days, the infants being left "at home" (M/R group); the Hinde and Davies study (1972), involving removal of the infants from the group for 13 days, the mothers being left "at home" (I/R group), and the present study involving removal of both mothers and infants from the group for 13 days and separating them from each other (M–I/R group). By comparing the M–I/R group with the M/R group, the effects of the infants' surroundings during separation could be assessed, as this was the only experimental variable involved. By comparing the M–I/R group with the I/R group, the effects of disturbance to the mothers by removal from the group could be assessed, as this was the only experimental variable involved here.

TABLE 2. THE DIFFERENT EXPERIMENTAL GROUPS

Experimental group	Maternal separation	Mother removed from group	Infant removed from group
M/R (Spencer-Booth & Hinde, 1971)	YES	YES	NO
I/R (Hinde & Davies, 1972)	YES	NO	YES
M–I/R (McGinnis, 1975)	YES	YES	YES

(i) *Pre-separation period*. The infants of the M/R and I/R groups tended to be more active overall ($P < 0{\cdot}002$, $P < 0{\cdot}02$, respectively) than the M–I/R group, and tended to engage in a greater degree of activity than the M–I/R infants ($P < 0{\cdot}002$, in both cases).

(ii) *Separation period*. The pattern of response to separation in the M–I/R and I/R groups was similar (the infants in both groups experienced social isolation in unfamiliar surroundings during separation). They showed a marked, prolonged period of protest, and depressive symptoms were not apparent for about 5 days. The M/R infants protested the most on day 4, the day of separation, but they became depressed 24 hr after their mothers' removal. On day 4, there were no significant differences between groups, although the M/R infants had a much higher median for whoos. On day 5, the M/R infants were less active than the M–I/R infants ($P < 0{\cdot}002$) and remained so on day 12 ($P < 0{\cdot}002$). The I/R infants whoo-called more than the M–I/R infants on day 12 ($P < 0{\cdot}2$) and spent more time sitting doing nothing ($P < 0{\cdot}02$). The M/R infants also spent more time sitting doing nothing on day 12 than the M–I/R infants ($P < 0{\cdot}02$). On day 16 the M/R infants were still less active than the M–I/R infants ($P < 0{\cdot}002$) and the I/R infants tended to whoo more than the M–I/R infants.

(iii) *Post-reunion period*. The I/R mothers did not have to re-establish social relationships as they had not been removed from their social groups and, consequently, were very attentive to their infants on the latter's return. On day 17, however, there were no significant differences between the I/R infants and the M–I/R infants. The M–I/R infants tended to have to play a greater role in maintaining proximity to their mothers than the I/R infants, which gave a slight indication that the M–I/R mothers were not quite as attentive to their infants as the I/R mothers. The M/R infants tended to be rejected by their mothers more than the M–I/R infants and they whoo-called more ($P < 0{\cdot}002$). The M/R mothers seemed to be less attentive to their infants than the M–I/R mothers, despite the fact that in both cases the mothers had been removed from their groups during separation.

On days 18–23 the I/R infants engaged in a greater degree of activity than the M–I/R infants ($P < 0{\cdot}002$) and were rejected less by their mothers ($P < 0{\cdot}02$). The M–I/R infants engaged in more play than the M/R infants (the latter did not play at all), and the M/R infants whoo-called more than the M–I/R infants ($P < 0{\cdot}02$, in both cases).

On days 30–44, the I/R infants were more active and engaged in a greater degree of activity than the M–I/R infants ($P < 0{\cdot}02$, $P < 0{\cdot}002$, respectively). The M–I/R infants were more active than the M/R infants and engaged in more social play ($P < 0{\cdot}02$).

DISCUSSION

The M–I/R infants took longer to recover from the effects of separation than the I/R infants, as they took longer to re-establish their relationships with their mothers. The M–I/R mothers had suffered more disturbance by removal from the social group than the I/R mothers, and on reunion, the M–I/R mothers had to re-establish social relationships as well as the mother–infant relationship. They were less attentive to their infants, therefore, than the I/R mothers. The M–I/R infants, however, recovered from the effects of separation faster than the M/R infants. The latter had not recovered play or activity levels by days 30–44, and were still very dependent on their mothers. The M–I/R mothers were more attentive to their infants than the M/R mothers, a fact that was difficult to account for, as the mothers in both cases had to re-establish social relations as well as the mother–infant relationship on reunion. The two situations did differ, however, in that the M/R infants were already in the group when their mothers were returned and under no apparent threat, whereas the M–I/R infants were returned shortly after their mothers and their mothers saw them being handled by technicians. This may have constituted a threat to their infants, and therefore, elicited a more protective response from the mothers. Another explanation (Hinde and Davies, 1972) could be that the M/R infants were adversely conditioned to their surroundings, having suffered all the ill-effects of separation there, and "home" was no longer a pleasant place for them. This may have resulted in their greater dependence on their mothers in the post-reunion period, and hence the greater need for the mothers to enforce independence on them. The M–I/R infants had suffered all the ill-effects of separation away from "home" and, therefore, it may still have been a pleasant place for them. They may also have been "relieved" to be "home" again. They were quieter and less clinging than the M/R infants, and, therefore, their mothers needed to reject them less. This may have made the infants more amenable to their mothers, and so the mothers were more attentive to them.

Thus the infants' surroundings during separation may affect their behaviour on reunion and hence their mothers' responsiveness to them (M–I/R vs M/R). Disturbance to the mothers by removal from the social group also affects their responsiveness to their infants on reunion (M–I/R vs I/R). These factors contribute to the ease with which the mother–infant relationship is re-established, and this in turn affects the infants' rate of recovery from a maternal separation experience. The disturbance suffered by the mothers on removal and consequent reunion with the group depended on their status and the nature of their relationships with group companions. Thus the social context in which maternal separations occur, also influences the ease with which the mother–infant relationship is re-established and the infants' rate of recovery.

The mothers that were under the most social stress from their group companions (low-rank mothers) were the least attentive to their infants, and concentrated more on avoiding social interactions. These mothers tended to be the most active, which prevented their infants from maintaining proximity to them with ease. This seemed to be one of the main causes of distress in the infants, and these infants took longer to recover from separation. It seemed, therefore, that mothers that had disturbed social relationships tended to have disturbed relationships with their infants. These infants also avoided social interactions, as did their mothers, and concentrated on maintaining their relationships with their mothers.

There is evidence from other studies that as an infant monkey matures, it assumes a rank just below that of its mother [Kawai (1958) and Koyama (1967), both on Japanese macaques; Sade (1967), rhesus monkeys]. The social status of the mothers and infants was not measured directly in the present study, but determined from approach/avoidance behaviours, which in studies of dominance determinants, seemed to give the clearest indication of status within social groups of monkeys (Rowell, 1972; Bernstein, 1970; Richards, 1972). It is possible that the nature of an infant monkey's relationship with its mother, as well as the reactions of the group towards the mother–infant pair, may contribute to the similarity of the ranks between mothers and their infants.

The social demands made on the mothers and infants on reunion, consisted mainly of a greater intensity of interaction rather than a marked increase in either agonistic or friendly behaviours. The mothers and infants were passive to the group's attentions. This passive role may have been due to the need for both mothers and infants first to re-establish the mother–infant relationship, and when that was achieved they could actively re-establish social relationships. If the mother–infant relationship was tense before separation, then the tension was exacerbated by separation. Monkey mothers seemed to play a greater role in determining the nature of the mother–infant relationship than their infants (although the infants also affected their mothers' behaviour). In these experiments, the infants served as their own controls, by comparing separation and post-reunion values with those in the pre-separation period. Although the infants' behaviour and their relationships with their mothers showed a regression, most probably as a result of separation, increasing age of the infants and changing circumstances (a social environment is not static) may also have affected the results. The mothers seemed to be strongly influenced by the complex network of social events and relationships in their groups.

An attempt is usually made in monkey studies of maternal separation to relate the findings to the human situation. The results reported here are somewhat different from those in human studies, in that the infants left at home with familiar figures were more distressed on reunion than infants removed to unfamiliar surroundings for separation. In children, the contrary is true (Robertson and Robertson, 1971). The other findings relating to the nature of the mother–infant relationship as an important factor affecting the infant monkeys' response to separation, is more in accord with findings in human studies. Vernon *et al.* (1965) found that children that had "good" relationships with their mothers were less affected by admission to hospital. It seems, at first sight, difficult to relate monkey mothers' social status to the human situation, but Robertson (1965) showed that human mothers distracted by personal relationships were less attentive to their infants. Although locomotor activity levels may not be the appropriate measure in the human situation as in the monkey one, human mothers that in some way or other provide a less secure base to which their infants can refer when necessary, or that are less sensitive to signals from their infants indicating a need for reassurance or proximity, may also prove high risk mothers in cases of maternal separation, i.e. their infants may be subjected to extreme distress on brief loss of mother.

The monkey situation is far from being directly comparable to the human one, but as pointed out by Hinde (1974) certain basic principles may be appropriate in the developmental stages of both species.

SUMMARY

The mother–infant relationship in rhesus monkey social groups is one relationship within a nexus of relationships, and changes in any part of the system affects the whole. During maternal separation experiments, therefore, monkey mothers were disturbed by removal from the social group, and this affected their responses to their infants on reunion. The infants seemed to be more affected by their mothers' behaviour than that of their group companions. The effects of separation on the infants were exacerbated if they were left "at home" and if their mothers were preoccupied with social companions. The latter depended on the mothers' social status.

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THE EXTENT OF INDIVIDUAL CHANGES IN I.Q. FOR AGES BETWEEN 6 MONTHS AND 17 YEARS, IN A BRITISH LONGITUDINAL SAMPLE

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INTRODUCTION

WHETHER emphasis is laid on the extent to which intelligence test scores are an expression of socio-cultural influences (Floud *et al.*, 1957; Hunt, 1961; Ginsburg, 1972) or of heredity (Burt, 1966; Jensen, 1969; Eysenck, 1971), and despite their limitations, it is difficult to see how their use could be avoided for many practical and research purposes. Practically, they serve as a tool for assessing the general level of cognitive ability, with a view to helping the individual child in a wide variety of educational, clinical and vocational contexts. In many research situations they are used as a convenient summary of cognitive ability, which may then be employed as a dependent variable in assembling or evaluating experimental groups. As intelligence tests are so widely employed, it is all the more important that users should have as clear an idea as possible of the likely extent of changes in score from one occasion of testing to another, whether in a helping or a research context.

Yet, despite the extensive use of various types of intelligence tests over several decades, there has been little systematic actuarial information concerning the changes as such, rather than in the form of correlations. Hilden (1949) provided complete data and curves on each of 30 subjects, but their value is limited by the unusual sample characteristics, use of different tests for different subjects, and the method of analysis. Sontag *et al.* (1958) presented smoothed curves of I.Q. scores from 3 to 12 years on 140 subjects, and using the smoothed values of 50 subjects derived mean and median changes over 1-year intervals, and median maximal change.

The only comprehensive tables are those of Pinneau (1961), based on a Californian longitudinal sample varying in size between 33 and 57 subjects, and tested with the California Scales and the Stanford–Binet. Some results of other studies are shown in Table 1. Several earlier ones (e.g. Gray and Marsden, 1924; Hildreth, 1926; Hirt, 1945) failed to distinguish effects of age and re-test interval separately, and are omitted.

In view of the factorial studies of Guilford (1967), Vernon (1961), etc., in which a variety of ability factors are distinguished, and of the distinction drawn by

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Cattell (1963; Horn and Cattell, 1967) between "fluid" and "crystallized" intelligence, it would be desirable to have information on the long-term stability of scores based on them. However, in the absence of data, these must await future longitudinal researches. The global measures of I.Q. chiefly employed up to now retain the justification of being widely used in practice, of their relatively high correlations with measures of scholastic attainment (Wiseman, 1966), and of the extent to which various measures of abilities can be shown to have a large "g" factor in common (Vernon, 1961).

Pinneau (1961) tabulated amounts of absolute change found between every pair of 20 ages between 1 month and 17 years, and, in the absence of other systematic data, one can only endorse his statement that "while the number of subjects was not large, the results are of exceptional interest because of the continuity of the sample and the long age span covered" (p. 8). Nevertheless, findings on a small sample in California, born between 1928 and 1929, may not provide an adequate basis for generalization to children born in other parts of the world or at other times. There is evidence to suggest that mean I.Q.s may be increasing (Tuddenham, 1948; Scottish Council, 1949; Cattell, 1950; Schaie *et al.*, 1973), which may affect amounts of change. So far as British children are concerned, mean I.Q.s tend to be above American standardization values (Jones, 1962; Rutter *et al.*, 1969; Scottish Council, 1967; Yule *et al.*, 1969) which, again, may affect changes in scores. Furthermore, Pinneau's analysis has a number of shortcomings, insofar as he took no account of possible sex differences, nor of the systematic effects of magnitude of initial scores—the well-known regression to the mean phenomenon. Additionally, the fact that he used varying numbers of subjects for different ages could confound sampling effects with age effects.

It therefore seemed worthwhile to follow Pinneau's approach, with some modifications, on data coming from a larger and more recent British longitudinal sample, with a wide range of social class backgrounds. This report extends to 17 years several previous ones on stability and change of abilities up to 11 years (Hindley, 1960, 1962, 1965; Moore, 1967, 1968; Munro, 1968), though in a different form.

It is, of course, true that considerably more data on relationships between scores across ages are available in the form of correlation coefficients [see the reviews of Bloom (1964) and Anastasi (1968)]. The pattern is now well established: the longer the interval between two tests, the lower the correlation (the "simplex" pattern), but for a constant interval the earlier the first test is given, the lower the re-test correlation, so that tests administered below about 1 year yield negligible correlations with adolescent and adult scores (e.g. Bayley, 1970; Thomas, 1970). One interpretation of this is that there is a change over time in the abilities being measured, in particular from the more sensori-motor items of the very early tests to the predominantly cognitive items of the later tests (Bayley, 1933, 1949; Bloom, 1964; Elkind, 1973). Correlations from testings after infancy remain substantial even over long periods (Table 1). For example, Bradway *et al.* (1958), following up children originally tested between the ages of 2 and 5½ years as part of the 1937 Stanford–Binet standardization sample, found correlations of 0·65 between initial tests and re-tests 10 years later, and 0·59 with tests 25 years later. The correlation between the 10 year retest scores (mean age = 14 years) and those of the 25 year retest (mean age = 29 years) was 0·85. From about 6 to 8 years correlations with I.Q.s in late adolescence are of the order of 0·7 or 0·8 (Honzik *et al.*, 1948; Bayley, 1949).

Unfortunately, despite Shapiro's (1951) critique of 25 years ago, and more recently that of Clarke and Clarke (1972), there remains a tendency throughout much of the psychological literature to overestimate the degree of stability denoted by a high correlation over time. This is clear from a consideration of the implications of the prediction formula: $y' = r_{12}x + e$, in standard measure, in which y' is the predicted score on the second testing, r_{12} is the correlation between initial scores (x) and second scores (y), and e is error. If the initial score is taken as a simple basis for prediction, whenever r_{12} is below unity one source of error will arise from regression of second scores towards mean y. If prediction is based on the formula, two sources of error remain. First, r_{12} is itself only a sample estimate of a true population value, and is therefore subject to error (Snedecor, 1956, p. 135ff.). Second, there is the error term, e. The extent of such errors is estimated by the standard error of the estimate ($S.E._{est}$), which is the standard deviation of discrepancies between observed scores on the second occasion and values predicted from the equation: $y' = r_{12}x$ (McNemar, 1969, p. 138ff.).

That these discrepancies remain substantial even with high correlations is clear from the formula: $S.E._{est}$ or $S_{yx} = S_y\sqrt{(1 - r_{12}^2)}$, in which S_y is the standard deviation of observed scores on the second testing. With a correlation of zero the term $\sqrt{(1 - r^2)}$, known as the coefficient of alienation (McNemar, 1969), has a value of one, and therefore S_{yx} is the same as the standard deviation of the observed scores on the second occasion (S_y), amounting to about 16 points of Stanford–Binet I.Q. To halve S_{yx} to eight points requires that $\sqrt{(1 - r^2)}$ have a value of 0·5, which in turn requires a correlation as high as 0·866. Even with this apparently high correlation, reference to a normal curve table indicates that 22% of subjects' scores will change by 10 or more points, and 6% by 15 or more.

Whilst it is true that algebraic manipulations of correlation coefficients, S_x, and S_y, can yield most of the information provided in Pinneau's tables, as he says "the correlation coefficient . . . has little practical significance for a large number of individuals who use mental test scores", and, as suggested above, to many may be misleading. There is therefore a great deal to be said for having data in the more directly comprehensible form of obtained amounts of change as in the studies summarized in Table 1. None of the data are as comprehensive as Pinneau's, and in some cases changes in mean scores between occasions are not controlled for. It will be seen that there is considerable variation between studies, partly dependent on age at first testing, with percentages changing by 15 or more I.Q. points, ranging from 23 to 59, over approximately a 10 year period from ages 2 to 6 years; and 5–12% changing by 30 or more points. Changes tend to be correspondingly less over shorter intervals. Reviews of such results are to be found in Rugg and Colloton (1921), Honzik (1938), and Pinneau (1961).

The employment of change-scores as a dependent variable has come somewhat into ill-repute as a result of their known unreliability, as they embody errors of measurement on each of the two occasions of testing (McNemar, 1969; Lord and Novick, 1968; Cronbach and Furby, 1970). It must be emphasized, however, that these authors are concerned with trying to estimate "true", error-free change.

TABLE 1. THE EXTENT OF I.Q. CHANGES IN SOME PREVIOUS STUDIES (AGES and INTERVALS IN YEARS)

Study	N	First Test Age	First Test M	First Test s.d.	Second Test Age	Second Test M	Second Test s.d.	Retest Interval	r	>15 points N	>15 points %	>30 points N	>30 points %
Ebert and	181	3	115	17·7	5	117	12·7	2	0·67	49	*27*	5	*3*
Simmons	181	3	115	17·7	10	129	17·9	7	0·50	97	*54*	39	*22*
(1943)	181	5	117	12·7	10	129	17·9	5	0·70	83	*46*	22	*12*
Bradway	52	2–3	116	16·9	12–13	115	18·4	10	0·66	17	*33*	6	*12*
(1944)	86	4–5	105	13·9	14–15	108	16·5	10	0·67	20	*23*	4	*5*
Honzik *et al.* (1948)*	222	6	119	12·6	18	118	11·6	12	0·61	131	*59*	20	*9*

*Figures represent maximal changes between 6 and 18 years.

Here, our aim is the less ambitious one of reporting obtained changes in score, which is the situation facing any user of tests. He should be aware that the more unreliable a test, the greater will be the size and variability of change-scores, but nevertheless he requires to know what to expect with the test in question, including all its accompanying errors. Furthermore, rather than simply assuming the presence of bivariate normal distributions, a necessary condition for making derivations from correlation coefficients, it is desirable to be able to examine not only the original distributions, but the distributions of change-scores, many of which Pinneau (1961) found to be bimodal, and which he attributed, in part, to the greater unreliability of the Stanford–Binet for high scores (Terman and Merrill, 1937).

We would add that no assumptions are made concerning the extent to which the same abilities are tested at each age. When a psychologist re-tests a child, he is testing both the same and a different person, displaying both the same and different abilities, with a test (even if it has the same name) which is both the same and different. [As Heraclitus put it 2½ millenia ago "we do and do not step into the same rivers"—quoted by Russell (1946).] Our concern is simply to provide information on the results obtained, using specified commonly used tests at specified ages, which is what the practitioner, or for that matter the researcher, has perforce to do all the time.

METHOD

The initial sample of the Longitudinal Research at the Centre for the Study of Human Development consisted of 222 children born between October 1951 and May 1954, recruited in a non-selective way before birth from a small number of ante-natal clinics in the Central London area (Moore *et al.*, 1954).

1. DATA COLLECTION

Testing programme

Subjects in the Longitudinal Research were tested with the Griffiths Scale of Infant Development (Griffiths, 1954) at 6 and 18 months; with the complete Stanford–Binet Form L at 3 and 5 years, and starred items only at 8 years (Terman and Merrill, 1937); with starred items of the Stanford–Binet Form L–M at 11 years (Terman and Merrill, 1960); and the AH4, a group test with verbal and non-verbal sub-scales (Heim, 1970), at 14 and 17 years. The Stanford–Binet was not used beyond 11 years because some subjects had nearly reached its ceiling by then. The AH4 was administered individually.

All tests up to 11 years were administered by two psychologists. At 6 and 18 months each tested the same half of the sample. TM tested all cases at 3 and 8 years, and CBH tested all cases at 5 and 11 years. Testing at 14 years was carried out by either TM or JM, and at 17 years by JM. Whenever a child was ill at ease, every effort was made to improve his adjustment to the situation. The problem was commonest in the early years, when such methods were employed as giving a drink or feed, allowing an infant to have a sleep, or letting the mother remain in the testing room (see Hindley, 1960). The child's behaviour in the situation was noted, and ratings were made on a number of behaviour variables.

Precise age of testing

Considerable efforts were made to test the subjects within 2 weeks of the due date at 6 and 18 months, and within 1 month thereafter. This was not always possible, and as both the Griffiths and Stanford-Binet norms provide for an age adjustment of the score, otherwise valid cases were not rejected. Such age adjustment is not readily possible with the AH4, so precise age of testing was correlated with point scores available at 14 and 17 years. Resulting *r*s ranged from $-0{\cdot}14$ to $+0{\cdot}13$ (Munro, unpublished), none of which were significant, so no attempts were made at correcting these scores.

Social classification

Two major criteria have been used, the five-point social class scale of the Registrar General (1950), based on father's occupation, and the Graffar (1956) Scale, based on the sum of five-point grades of father or mother (whichever is the higher) on each of the criteria: occupation, source of revenue, education, and quality of dwelling. Both measures were made at the time of the child's birth.

2. THE SAMPLE

Selection

For the present purpose two longitudinal samples were selected: a larger one, tested from 6 months to 14 years (Sample A); and a smaller one, covering the longer duration of 6 months to 17 years (Sample B). The criterion for inclusion was that a subject had been validly tested at all the ages in question, or at all but one intermediate age. In the latter case the missing value was interpolated (see below), but cases with initial or terminal missing values were rejected as greater errors of estimation would then be likely.

Validity ratings

On the basis of the written reports and ratings of behaviour made after each testing session, a rating of validity of each testing was made by two psychologists, and agreement reached in cases of doubt.

Validity Rating Scale: 1. Validly tested.
2. I.Q. obtained, slight doubt re validity.
3. I.Q. obtained, some doubt re validity.
4. I.Q. obtained, serious doubt re validity.

A test was considered of doubtful validity if there was poor co-operation, emotional upset, ill health, etc., of a temporary kind. If a child's performance was impaired by prevailing personality characteristics such as timidity, or by some relatively permanent form of maladjustment, the result was not regarded as invalid, as the performance was considered to be typical of that child. Only test results with a validity of 1 or 2 were deemed "valid" and included in this analysis. Instances of validity 3 or 4 were treated as missing values. To have included them would have increased each sample by 11 subjects.

Composition of present samples

(a) *Sex*. One hundred and nine subjects (59 boys and 50 girls) satisfied the criteria up to 14 years and are included in Sample A. Eighty-four subjects (47 boys and 37 girls) were eligible for Sample B (up to 17 years), 83 of whom were also in Sample A. Subjects leaving the sample after 14 years mostly did so on starting work from 15 years onwards.

(b) *Social class* (*Table* 2). There were no significant differences in social class between the sexes, either by father's occupation or Graffar (1956) scores. Table 2 shows a wide social class range by father's occupation. No Census figures exist for the precise area of recruitment, but a comparison with those of the London Administrative County (Registrar General, 1953) reveals significant differences of both Sample A ($P < 0{\cdot}02$) and Sample B ($P < 0{\cdot}05$), due to under-representation of class 5 and over-representation of class 2. A more serious difficulty in testing the representativeness of this, or other samples of parents, is that the Census figures are based on the whole population, not simply on parents of young children.

TABLE 2. SOCIAL CLASS COMPOSITION OF THE SAMPLES

Social class			1	2	3	4	5	Total
Father's occupation	Sample A	*N*	4	21	63	15	6	109
		%	*3·7*	*19·3*	*57·8*	*13·8*	*5·5*	
	Sample B	*N*	3	16	47	14	4	84
		%	*3·6*	*19·0*	*56·0*	*16·7*	*4·8*	
	Census*	%	4·0	13·0	54·2	11·9	16·9	
Graffar scale	Sample A	*N*	1	17	32	58	1	109
		%	*0·9*	*15·6*	*29·4*	*53·2*	*0·9*	
	Sample B	*N*	0	13	27	44	0	84
		%	*0*	*15·5*	*32·1*	*52·4*	*0*	

*Comparing distribution by father's occupation with London Administrative County (Census): Sample A $\chi^2 = 12{\cdot}27$; df = 4; $P < 0{\cdot}02$. Sample B $\chi^2 = 11{\cdot}38$; df = 4; $P < 0{\cdot}05$.

Comparing leavers since birth from both samples, with those who remained, in both cases there were non-significant trends ($0{\cdot}05 < P < 0{\cdot}10$) towards a selective loss of class 5 subjects. There was no evidence of selective loss between 14 and 17 years by father's occupation ($P = 0{\cdot}6$).

(c) *I.Q.s* (*Table* 3). Consistent with other studies on British samples, the mean I.Q.s on the Stanford–Binet are all above 100 (see Introduction). At all ages the Longitudinal Samples score higher than the rest, and significantly so from 3 to 11 years, as regards Sample A. It is to be noted that the Rest in relation to Sample A consists of a smaller number of subjects, with lower I.Q.s, than the Rest in relation to Sample B, which includes a number of subjects from Longitudinal Sample A. Apart from the general bias in the Longitudinal samples, in both of them a substantial

TABLE 3. COMPARISON OF LONGITUDINAL SAMPLES A AND B WITH THE REST VALIDLY TESTED AT EACH AGE: D.Q.S AT 6 AND 18 MONTHS, I.Q.S AT 3–11 YEARS, POINT SCORES AT 14 AND 17 YEARS

	Sample A							Sample B						
	Longitudinal			Rest				Longitudinal			Rest			
Age	*N*	M	s.d.	*N*	M	s.d.	*P*	*N*	M	s.d.	*N*	M	s.d.	*P*
6 months	109	**108·5**	11.0	43	**106·0**	13·3	N.S.	84	**108·6**	11·9	68	**106·8**	11·3	N.S.
18 months	93	**103·8**	9·8	54	**100·3**	13·3	N.S.	73	**103·8**	9·9	74	**101·3**	12·1	N.S.
3 years	101	**113·0**	19·0	59	**104·0**	20·2	**	77	**112·9**	19·6	83	**106·8**	19·9	**
5 years	106	**115·3**	16·3	53	**105·7**	19·0	**	81	**114·3**	16·5	78	**109·8**	18·7	N.S.
8 years	107	**121·2**	20·8	46	**107·7**	18·9	***	83	**121·3**	21·6	70	**112·2**	19·6	**
11 years	109	**122·1**	21·8	32	**107·9**	16·6	***	84	**121·0**	22·3	57	**115·7**	20·0	N.S.
14 years	109	**68·7**	16·7	21	**64·3**	20·7	N.S.	83	**69·8**	16·0	47	**64·9**	19·4	N.S.
17 years	—	—	—	—	—	—	—	84	**84·1**	18·7	15	**80·5**	18·3	N.S.

$^*P < 0{\cdot}05$, $^{**}P < 0{\cdot}01$, $^{***}P < 0{\cdot}001$.

N is the number of cases, M is the mean, s.d. is the standard deviation, *P* is the probability of difference on a *t*-test.

rise in scores occurs from 3 : 0 to 11 : 0 on the Stanford–Binet, as it does for the Rest in relation to Sample B (but very little for the Sample A Rest). The rises would be consistent both with practice effects and with a tendency for subjects with rising trends of scores to remain selectively in the Longitudinal samples.

(d) *Mothers' attitudes*. Parental attitudes are known to have an influence on the development of ability (see e.g. Bayley and Schaefer, 1964; Douglas *et al.*, 1968; Floud *et al.*, 1957; Wiseman, 1964), so given the evidence of upward bias in the longitudinal samples, it might have been expected that they would differ in maternal attitudes from the rest. However, the Parent Attitude Research Inventory (Schaefer and Bell, 1958), administered to mothers when the children were aged 8 years, reveals no such significant differences on any of the 22 sub-scales.

3. DERIVATION OF STANDARD SCORES

In view of limitations in the standardization of the Griffiths and AH4, and the lack of British standards for the Stanford–Binet, the D.Q., I.Q. and AH4 point scores were converted into standard deviation scores from the mean at each age. The distributions at each age were approximately normal. This procedure not only compensates for standardization differences between tests and between ages, but also eliminates the effect of an upward trend in scores with age for the sample as a whole. The standardization was carried out in two stages, separately for each sample. Initially only cases with a valid assessment (validity rating 1 or 2) at every age were employed, yielding 80 cases for sample A (6 months–14 years) and 61 cases for sample B (6 months–17 years).

The same means and standard deviations were used to calculate standard scores for those cases having an invalid or missing value at only one, non-terminal age. This increased the size of sample A to 109 and sample B to 84. The missing (or effectively missing) value was then interpolated by taking the mean of the subject's adjacent standard scores, a method also used by Honzik *et al.* (1948) and McCall *et al.* (1973). Slightly smaller mean errors were produced by this simple method than by fitting a linear curve to all of an individual's data points, when each method was used to estimate observed values at two non-terminal ages, for all subjects with complete data. Twenty-nine values were interpolated for Sample A, 16 at 18 months and eight at 3 years; and 23 for Sample B, 11 at 18 months and seven at 3 years.

Each case now had a value at each age; in the second stage of the standardization the mean and standard deviation of these provisional standard scores were used to re-standardize the data, giving a Final Standard Score for each case. It can be seen in Table 3 that 1 s.d. unit is approximately equivalent to 10 or 11 points of Griffiths D.Q., 20 points of Stanford-Binet I.Q., and 16 to 18 points of AH4 scores, varying slightly with age and sample.

RESULTS

Relationships between scores at any pair of ages can be examined in several ways. The correlations indicate overall relationships, and from them all the other information could be derived, but for complete accuracy all the distributions would have to be bivariate normal. Thus, much of the data in the tables are implicit in the correlations, although the interrelationships involved are seldom explicitly demonstrated.

Correlations of scores across ages

The correlations between scores at different ages (Table 6) show the familiar simplex pattern (see Introduction), with smaller values the longer the interval. There is also an increase in values between adjacent ages, indicating an increasing stability of scores as the subjects get older. The correlations are of a comparable magnitude to those in other studies (see reviews of Bloom, 1964; Anastasi, 1968). Values tend to be low and often insignificant over longer intervals when the baby-test is involved, especially for the boys, but reach substantial values from 3 years

TABLE 4. AMOUNTS AND DIRECTIONS OF CHANGES IN STANDARD SCORES ACROSS AGES

Interval	Boys						Girls					
	Sk.	Mdn	Q_1	Q_3	Range		Sk.	Mdn	Q_1	Q_3	Range	
6–18 months		**− 0·31**	− 0·81	0·75	− 2·99	3·85		**0·02**	− 0·46	0·44	− 1·75	2·30
(months–years)												
6–3		**0·06**	− 0·91	0·78	− 2·71	2·95		**− 0·18**	− 0·79	0·35	− 2·45	2·90
6–5		**0·15**	− 0·89	0·96	− 3·93	3·21		**− 0·28**	− 0·94	0·29	− 2·38	2·53
6–8		**− 0·04**	− 0·80	1·08	− 2·06	3·71	***	**− 0·54**	− 0·97	0·43	− 2·42	3·70
6–11		**0·22**	− 0·83	0·98	− 2·16	3·88	*	**− 0·47**	− 1·06	0·22	− 2·34	3·38
6–14		**0·37**	− 0·75	0·89	− 2·46	3·57	**	**− 0·43**	− 1·12	0·24	− 2·32	3·32
6–17		**0·27**	− 0·74	1·20	− 2·44	3·09	*	**− 0·79**	− 1·14	0·30	− 2·18	2·77
(months–years)												
18–3	*	**0·17**	− 0·52	0·65	− 3·20	2·07		**− 0·17**	− 0·75	0·49	− 1·83	2·56
18–5	*	**0·30**	− 0·49	1·03	− 3·03	2·07		**− 0·34**	− 0·95	0·33	− 2·41	1·55
18–8		**0·29**	− 0·54	1·02	− 2·65	2·58	**	**− 0·49**	− 1·28	0·40	− 2·02	3·80
18–11		**0·36**	− 0·60	1·09	− 3·08	2·63		**− 0·53**	− 1·29	0·54	− 2·50	2·48
18–14		**0·36**	− 0·60	1·16	− 3·30	2·90		**− 0·37**	− 1·17	0·23	− 3·01	2·87
18–17		**0·53**	− 0·47	1·03	− 3·23	2·46	**	**− 0·56**	− 1·15	0·12	− 2·20	2·91
(years)												
3–5	***	**0·16**	− 0·20	0·49	− 2·50	1·24		**− 0·19**	− 0·52	0·16	− 1·60	1·62
3–8	***	**0·17**	− 0·28	0·53	− 1·21	3·37		**− 0·32**	− 0·76	0·27	− 2·56	2·43
3–11	***	**0·22**	− 0·20	0·55	− 1·88	3·54		**− 0·38**	− 0·95	0·13	− 2·34	2·24
3–14		**− 0·10**	− 0·37	0·81	− 1·65	2·87		**− 0·22**	− 1·01	0·27	− 2·16	2·79
3–17		**0·26**	− 0·31	0·64	− 1·46	2·31		**− 0·09**	− 1·03	0·23	− 2·25	3·01
5–8	**	**0·04**	− 0·33	0·39	− 1·07	2·20	*	**− 0·10**	− 0·44	0·34	− 1·48	2·54
5–11	*	**0·01**	− 0·43	0·40	− 1·12	2·34		**− 0·14**	− 0·48	0·33	− 1·57	1·22
5–14		**0·10**	− 0·56	0·59	− 1·81	2·38		**− 0·14**	− 0·68	0·41	− 2·03	2·02
5–17		**0·03**	− 0·39	0·57	− 2·25	2·11		**− 0·02**	− 0·52	0·35	− 1·84	1·48
8–11		**0·02**	− 0·19	0·21	− 1·42	0·97		**0·00**	− 0·34	0·42	− 1·42	1·01
8–14		**0·11**	− 0·60	0·50	− 2·52	1·61		**0·08**	− 0·57	0·43	− 1·78	1·22
8–17		**0·09**	− 0·52	0·49	− 1·57	1·26		**− 0·05**	− 0·35	0·47	− 1·40	1·40
11–14		**0·07**	− 0·58	0·50	− 2·12	1·64		**− 0·01**	− 0·56	0·44	− 1·38	1·35
11–17		**0·04**	− 0·51	0·57	− 1·52	2·38		**0·04**	− 0·58	0·42	− 1·31	1·29
14–17		**− 0·08**	− 0·33	0·26	− 1·15	1·63		**0·01**	− 0·32	0·25	− 1·34	1·10

$*P < 0·05$, $**P < 0·01$, $***P < 0·001$.

Boys: to 14 years $N = 59$, to 17 years $N = 47$; girls: to 14 years $N = 50$, to 17 years $N = 37$. Sk. is the significance of skewness; Mdn is the median; Q_1 and Q_3 are quartiles.

onwards. Note, however, that the correlations between 11 and 14 years are smaller than between 8 and 11 years. This is most plausibly due to the change of test between 11 and 14 years, as the correlations between 14 and 17 years (depending on the AH4) are again high.

Among girls the correlations tend to be somewhat higher than among boys, but only significantly so between 6 and 18 months ($P < 0{\cdot}05$), and therefore figures are not presented separately for the sexes.

Changes in scores (*Table* 4)

One of the major objections to the use of change scores, namely discrepancies in standardization of tests at different ages, is disposed of by the use of standard scores. Their high unreliability is not, of course, overcome, but is embodied in any consideration of changes in obtained scores (see Introduction).

The distributions of change scores across each age interval, for boys and girls separately, were not all of normal form, as also found by Pinneau (1961). Unlike him, we did not find clearly bimodal or rectangular distributions, but in each sex seven out of 28 distributions were significantly skewed (Table 4). In the boys these all involved ages 5 years or less, with negative skewness, i.e. a spreading out of values at the lower end. In girls all but one involved an initial Griffiths test, and, except in one instance, with positive skewness. Because of the non-normality of the distributions the data in Tables 4 and 5 are given in terms of median amounts of change, with quartiles as measures of dispersion. The extent of skewness can be seen from the asymmetrical distances of the two quartiles from the median, in many instances. All values refer to the larger Sample A, except for those involving 17 years, when Sample B has been employed. Trends are very similar in the two samples.

The median change is nearly always positive in the boys, with a tendency to increase in size over longer intervals. Conversely, the median change in girls is predominantly negative, again increasing in magnitude over longer intervals. These opposing tendencies are necessarily reciprocal as the mean at each age is zero, and reflect a significant difference (Sample A $P < 0{\cdot}01$, Sample B $P < 0{\cdot}02$) in the overall trends of boys' and girls' scores (Hindley and Owen, in preparation). In view of the large overlap in change scores of the two sexes, major emphasis should be placed on the figures for the total sample.

In interpreting the figures, and taking as an example change from 5 to 17 years, in boys, there is little interest in the fact that the median change is 0·03 s.d., or virtually zero. If primary concern lies in the extent of variation, it is to the quartiles that attention should be directed. Q_1 indicates that 25% fell from their initial score by 0·39 s.d. or more, and Q_3 that 25% rose by 0·57 s.d. or more. Thus 50% have a change score between these ages, lying outside the limits of −0·39 s.d. and +0·57 s.d. (roughly −8 and +11 points of I.Q.).*

Change scores ignoring sign (*absolute changes*) (*Table* 5)

For revealing typical amounts of change, or what might be called "volatility", it is more convenient to ignore sign and present the data in the same way as Pinneau

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*Here, and subsequently, unless otherwise stated, all I.Q. equivalents are in terms of the average obtained Stanford–Binet s.d.s, amounting to approximately 20 points (see Table 3).

TABLE 5. ABSOLUTE CHANGES IN STANDARD SCORES ACROSS AGES

Interval	Boys			Girls			Total				
	Mdn	Q_1	Q_3	Mdn	Q_1	Q_3	Mdn	(Exp.)	Q_1	Q_3	Pinneau Mdn*
6–18 months	**0·82**	0·43	1·02	**0·46**	0·23	0·82	**0·62**	(0·68)	0·35	0·98	—
(months–years)											
6–3	**0·91**	0·57	1·45	**0·74**	0·33	1·23	**0·89**	(0·81)	0·38	1·40	**1·03**
6–5	**0·97**	0·41	1·48	**0·67**	0·31	1·34	**0·93**	(0·85)	0·32	1·46	**1·53**
6–8	**0·87**	0·51	1·51	**0·89**	0·51	1·29	**0·88**	(0·90)	0·51	1·48	**1·00**
6–11	**0·92**	0·50	1·51	**0·92**	0·45	1·42	**0·92**	(0·87)	0·46	1·51	**1·02**
6–14	**0·88**	0·46	1·56	**0·88**	0·35	1·25	**0·88**	(0·88)	0·44	1·53	**0·95**
6–17	**0·92**	0·65	1·52	**0·92**	0·52	1·32	**0·92**	(0·90)	0·61	1·52	**1·08**
18–3	**0·59**	0·33	0·92	**0·57**	0·32	0·99	**0·58**	(0·64)	0·32	0·99	**0·62**
18–5	**0·79**	0·39	1·15	**0·79**	0·39	1·06	**0·79**	(0·72)	0·39	1·18	**0·51**
18–8	**0·92**	0·32	1·29	**0·99**	0·47	1·44	**0·94**	(0·80)	0·36	1·35	**0·64**
18–11	**0·90**	0·49	1·39	**0·93**	0·55	1·56	**0·90**	(0·84)	0·53	1·45	**0·86**
18–14	**0·83**	0·41	1·46	**0·86**	0·36	1·26	**0·85**	(0·86)	0·38	1·36	**0·60**
18–17	**0·95**	0·52	1·34	**0·72**	0·34	1·24	**0·84**	(0·84)	0·43	1·33	**0·63**
(years)											
3–5	**0·39**	0·18	0·65	**0·40**	0·19	0·67	**0·39**	(0·44)	0·19	0·69	**0·60**
3–8	**0·45**	0·23	0·67	**0·66**	0·31	1·09	**0·56**	(0·56)	0·27	0·81	**0·60**
3–11	**0·41**	0·22	0·77	**0·76**	0·26	1·18	**0·55**	(0·62)	0·22	0·98	**0·94**
3–14	**0·56**	0·29	1·16	**0·73**	0·27	1·15	**0·61**	(0·68)	0·29	1·19	**0·84**
3–17	**0·52**	0·29	0·96	**0·50**	0·18	1·24	**0·51**	(0·65)	0·23	1·09	**0·80**
5–8	**0·41**	0·23	0·74	**0·42**	0·23	0·68	**0·42**	(0·46)	0·23	0·71	**0·45**
5–11	**0·44**	0·20	0·76	**0·40**	0·22	0·79	**0·43**	(0·45)	0·21	0·79	**0·59**
5–14	**0·62**	0·36	1·20	**0·65**	0·29	1·01	**0·63**	(0·62)	0·31	1·14	**0·47**
5–17	**0·52**	0·26	1·05	**0·52**	0·33	1·10	**0·52**	(0·59)	0·27	1·10	**0·46**
8–11	**0·21**	0·13	0·39	**0·41**	0·14	0·61	**0·26**	(0·32)	0·14	0·55	**0·39**
8–14	**0·60**	0·38	0·87	**0·49**	0·23	0·85	**0·57**	(0·53)	0·26	0·89	**0·32**
8–17	**0·56**	0·18	0·94	**0·46**	0·22	0·70	**0·49**	(0·48)	0·20	0·86	**0·22**
11–14	**0·57**	0·36	0·98	**0·51**	0·29	0·81	**0·54**	(0·52)	0·30	0·89	**0·31**
11–17	**0·60**	0·28	0·95	**0·54**	0·26	0·79	**0·58**	(0·53)	0·26	0·95	**0·35**
4–17	**0·32**	0·15	0·56	**0·32**	0·16	0·52	**0·32**	(0·35)	0·16	0·55	**0·27**

*Pinneau's (1961) median values converted to standard score basis.

Boys: to 14 years $N = 59$, to 17 years $N = 47$; girls: to 14 years $N = 50$, to 17 years $N = 37$. Mdn is the median; Q_1 and Q_3 are quartiles; Exp. is the expected median.

(1961). On this basis all the distributions are J-shaped (Table 5), with larger numbers of subjects showing small changes, and decreasing numbers showing larger ones. Here, for the total sample, the subjects with changes between zero and the median are (with exceptions due to skewness etc.) those to be found between Q_1 and Q_3 in the distributions of signed changes, and those above the median here would lie outside those limits. It can be seen in Table 5 that there is little difference between boys and girls in the median amounts of absolute change, so that comments are based on the figures for the sexes combined. However, there is a tendency for a greater spread in the change scores of boys, so that across 15 age intervals their Q_1 values are higher, against 10 for the girls, and across 18 intervals Q_3 is higher for the boys against 10 for the girls.

In inverse relation to the size of the correlations, there is a general tendency for amounts of change to be larger the earlier the first testing, and greater over longer than over shorter intervals. The large amounts of change from Griffiths' scores at 6 and 18 months are very evident, consistent with the known poor predictive value of baby tests. Thus, from 6 months to 17 years only 25% change by less than 0·61 s.d. (12 points of I.Q.), 50% change by 0·92 s.d. (18 I.Q. points), and 25% by 1·52 s.d. (30 I.Q. points) or more.

Amounts of change are almost halved for scores based on the Stanford–Binet from 3 years onwards, but are nevertheless substantial in half the subjects. Changes from 3, 5, 8 and 11 years to 17 years are of a similar order. Thus, from 5 years 25% change by less than 0·27 s.d., 50% by less than 0·52 s.d. (10 I.Q. points)—and, of course, 50% by more than this, including 25% by 1·10 s.d. (22 I.Q. points) or more, and 6% by 1·50 s.d. (30 I.Q. points) or more. Between 14 and 17 years the median change is only about six points of I.Q., but 25% of subjects still change by about 10 points or more.

As regards the magnitude of change in individual subjects, McCall *et al.* (1973) say of a previous report from this project (Moore, 1967), that it contains "probably the most impressive shift in I.Q. in the literature" (p. 3), namely of 73 I.Q. points in a boy between 3 and 8 years. In s.d. score form his change of 3·37 s.d. (or 67 I.Q. points on the present basis) is surpassed in several instances. In fact, the largest gain for a boy is 3·88 s.d. (equivalent to 78 I.Q. points) between 6 months and 11 years: in raw score terms he increased from a D.Q. of 84 to an I.Q. of 158. The largest gain for a girl is 3·80 s.d. (76 points); with a D.Q. of 96 at 18 months and I.Q. of 182 at 8 years. The largest fall is for a boy, amounting to 3·93 s.d. (79 I.Q. points) between 6 months and 5 years. At the other extreme are a number of subjects who showed very little change in score.

It is of considerable educational interest to look separately at changes within the pre-school, primary and secondary school periods (Table 5). In the pre-school period from 6 months to 5 years, 50% of subjects changed by 0·93 s.d. (19 I.Q. points) or more, and 25% by 1·50 s.d. (30 points). Amounts of change are slightly less from 18 months. In the primary period, when the Stanford–Binet was employed, the median amount of change is more than halved to 0·43 s.d. (nine I.Q. points) between 5 and 11 years. However, 25% changed by 0·79 s.d. (16 points) or more, and 3% by 1.50 s.d. (30 points) or more. Changes during the secondary period, from 11 to 17 years are slightly greater, perhaps due to the change of test, with a median of 0·58 s.d. (12 points), and 25% changing by 0·95 s.d. (19 points) or more.

Comparison of our results and Pinneau's

In order to compare our results with those of Pinneau, his reported changes were converted to an approximate standard score basis, by dividing each change by the mean of the standard deviations of the scores at the two ages involved: Pinneau had already adjusted his scores for a change in means between pairs of ages. If the standard deviations at the two ages are the same, then the approximation is exact. The standard deviations reported by Pinneau on the Stanford–Binet are very similar to those of the present study.

It can be seen (Table 5) that there is a general similarity of the order of change over the various intervals. The differences are greater for periods involving use of different tests. Thus, there is rather less change from our 6 months Griffiths scores than from Pinneau's 6 months California First Year Scale scores, but rather more from our 18 months Griffiths scores than from his California Pre-School Scale scores. Our use of the Stanford–Binet at 3 years yielded lower change scores than from his California Pre-School scores. Conversely, our use of the AH4 at 14 and 17 years appears responsible for rather bigger shifts than Pinneau's continued use of the Stanford–Binet. Nevertheless, taking account of the use of different tests at several ages, there can be little doubt of the overall similarity of trend.

Obtained changes and changes estimated from correlations across ages

The extent to which obtained changes can be accurately estimated from correlations is indicated in Table 5. From each correlation, based on the total sample, the appropriate standard error of the difference scores can be derived.* Applying this to a normal curve table enables the ±25% points to be obtained, which will be equivalent to the expected median absolute change, ignoring sign.

It can be seen in Table 5 that most of the discrepancies are small, being less than 10% in 19 out of 28 instances, but up to 20% in eight instances. The general order of change is therefore derivable from the correlations. The more the distributions in question are normal, the more accurate will be the estimated changes. It is also worth noting that with a correlation across ages as high as 0·76 from 5 to 8 years, for the total sample, median change is still expected to be 0·47 s.d. (nine I.Q. points), and with r of 0·89, between 8 and 11 years, a median change of 0·32 s.d. (six points) is to be expected.

Relationships between initial score and change

The data in Tables 4 and 5 refer to overall distributions of change scores. They take no account of initial level of score, which is relevant from two points of view. One issue is whether there is greater "volatility" among high than among low scorers. The other concerns both amount and likely direction of change in relation to initial score.

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*$s_d^2 = S_1^2 + S_2^2 - 2r_{12}S_1S_2$, where s_d^2 is the variance of the signed difference scores, S_1^2 and S_2^2 are the variances of scores on occasions 1 and 2 (formula 6.6, McNemar, 1969). In our case, with $S = 1$ at all ages, the formula reduces to $s_d^2 = 2 - 2r_{12}$.

TABLE 6. CORRELATIONS, VARIABILITY AND EXPECTED CHANGES TAKING ACCOUNT OF REGRESSION

					Expected changes for initial score of:								
					+ 2 s.d. units			+ 1 s.d. unit			0 s.d. units		
Interval	r_{12}	r'	s_d	S.E.$_{est}$	Q_1	Mdn	Q_3	Q_1	Mdn	Q_3	Q_1	Mdn	Q_3
(months)													
6–18	0·48	− 0·51	1·02	0·88	− 1·63	**− 1·04**	− 0·45	− 1·11	**− 0·52**	0·07	− 0·59	**0·00**	0·59
(months–years)													
6–3	0·27	− 0·60	1·21	0·96	− 2·11	**− 1·46**	− 0·82	− 1·38	**− 0·73**	− 0·09	− 0·65	**0·00**	0·65
6–5	0·20	− 0·63	1·26	0·98	− 2·25	**− 1·59**	− 0·94	− 1·45	**− 0·80**	− 0·14	− 0·66	**0·00**	0·66
6–8	0·09	− 0·67	1·35	1·00	− 2·49	**− 1·82**	− 1·15	− 1·58	**− 0·91**	− 0·24	− 0·67	**0·00**	0·67
6–11	0·15	− 0·65	1·30	0·99	− 2·36	**− 1·70**	− 1·03	− 1·51	**− 0·85**	− 0·19	− 0·66	**0·00**	0·66
6–14	0·13	− 0·66	1·32	0·99	− 2·40	**− 1·74**	− 1·07	− 1·53	**− 0·87**	− 0·20	− 0·66	**0·00**	0·66
6–17	0·09	− 0·67	1·35	1·00	− 2·48	**− 1·81**	− 1·14	− 1·57	**− 0·91**	− 0·24	− 0·67	**0·00**	0·67
18–3	0·55	− 0·48	0·95	0·84	− 1·47	**− 0·91**	− 0·35	− 1·02	**− 0·45**	0·11	− 0·56	**0·00**	0·56
18–5	0·43	− 0·53	1·07	0·90	− 1·75	**− 1·14**	− 0·54	− 1·18	**− 0·57**	0·03	− 0·61	**0·00**	0·61
18–8	0·28	− 0·60	1·20	0·96	− 2·08	**− 1·44**	− 0·80	− 1·36	**− 0·72**	− 0·08	− 0·64	**0·00**	0·64
18–11	0·21	− 0·63	1·25	0·98	− 2·23	**− 1·57**	− 0·92	− 1·44	**− 0·79**	− 0·13	− 0·65	**0·00**	0·65
18–14	0·18	− 0·64	1·28	0·98	− 2·30	**− 1·64**	− 0·98	− 1·48	**− 0·82**	− 0·16	− 0·66	**0·00**	0·66
18–17	0·21	− 0·63	1·25	0·98	− 2·23	**− 1·57**	− 0·92	− 1·44	**− 0·79**	− 0·13	− 0·65	**0·00**	0·65
(years)													
3–5	0·78	− 0·33	0·66	0·63	− 0·86	**− 0·44**	− 0·02	− 0·64	**− 0·22**	0·20	− 0·42	**0·00**	0·42
3–8	0·65	− 0·42	0·83	0·76	− 1·20	**− 0·70**	− 0·19	− 0·86	**− 0·35**	0·16	− 0·51	**0·00**	0·51
3–11	0·58	− 0·46	0·92	0·83	− 1·39	**− 0·84**	− 0·30	− 0·97	**− 0·42**	0·12	− 0·55	**0·00**	0·55
3–14	0·48	− 0·51	1·02	0·88	− 1·62	**− 1·03**	− 0·45	− 1·10	**− 0·52**	0·07	− 0·59	**0·00**	0·59
3–17	0·53	− 0·48	0·97	0·85	− 1·50	**− 0·93**	− 0·37	− 1·03	**− 0·47**	0·10	− 0·57	**0·00**	0·57
5–8	0·76	− 0·34	0·69	0·64	− 0·90	**− 0·47**	− 0·04	− 0·67	**− 0·24**	0·20	− 0·43	**0·00**	0·43
5–11	0·78	− 0·33	0·67	0·63	− 0·87	**− 0·45**	− 0·03	− 0·65	**− 0·22**	0·20	− 0·42	**0·00**	0·42
5–14	0·57	− 0·46	0·92	0·82	− 1·40	**− 0·85**	− 0·30	− 0·98	**− 0·43**	0·12	− 0·55	**0·00**	0·55
5–17	0·61	− 0·44	0·88	0·79	− 1·30	**− 0·77**	− 0·24	− 0·91	**− 0·39**	0·14	− 0·53	**0·00**	0·53
8–11	0·89	− 0·24	0·47	0·46	− 0·53	**− 0·23**	0·08	− 0·42	**− 0·11**	0·20	− 0·31	**0·00**	0·31
8–14	0·69	− 0·39	0·79	0·72	− 1·11	**− 0·62**	− 0·14	− 0·80	**− 0·31**	0·17	− 0·49	**0·00**	0·49
8–17	0·74	− 0·36	0·72	0·67	− 0·96	**− 0·52**	− 0·07	− 0·71	**− 0·26**	0·19	− 0·45	**0·00**	0·45
11–14	0·69	− 0·39	0·78	0·72	− 1·09	**− 0·61**	− 0·13	− 0·79	**− 0·31**	0·18	− 0·48	**0·00**	0·48
11–17	0·68	− 0·40	0·79	0·73	− 1·12	**− 0·63**	− 0·14	− 0·80	**− 0·32**	0·17	− 0·49	**0·00**	0·49
14–17	0·87	− 0·26	0·52	0·50	− 0·60	**− 0·27**	0·07	− 0·47	**− 0·13**	0·20	− 0·33	**0·00**	0·33

*Significance of correlations: when 17 years involved ($N = 84$), $p_{05} = 0{\cdot}22$, $p_{01} = 0{\cdot}28$, $p_{001} = 0{\cdot}36$
when 17 years involved ($N = 109$), $p_{05} = 0{\cdot}19$, $p_{01} = 0{\cdot}25$, $p_{001} = 0{\cdot}31$.

r_{12} is the correlation* between first and second scores; r' is the correlation* between initial score and change; s_d is the standard deviation of difference scores; S.E.$_{est}$ is the standard error of estimate; Mdn is the median; Q_1 and Q_3 are quartiles.

Sheer volatility is best measured by absolute change, and following Pinneau (1961) initial scores were therefore correlated with change irrespective of sign. Six months scores showed small negative correlations with amounts of subsequent change. The remaining 15 correlations showed no departure from chance expectation indicating no relationship of volatility to score level.

The relationship of initial score to direction and amount of change can be looked at in several ways (Table 6), and can be estimated from the correlation between scores at pairs of ages, a method apparently used by Vernon (1955). First, it can be seen that a positive correlation between scores on two occasions (r_{12}) necessarily implies a negative correlation of initial scores with signed change scores (r')[*] up to the limiting case of $r_{12} = 1$, $r' = 0$. As r_{12} falls, so the negative correlation of change with initial score increases, with increasing regression to the mean. For most of the values of r in the table, the negative correlations with change scores are significant.

Regression to the mean is shown directly by the difference (d') between the initial score x and predicted y', using the regression equation.[†] Although the equation yields mean values of y' for a particular value of x, to retain consistency with the previous tables they are presented in Table 6 as median amounts of expected change, for initial scores ranging from +2 s.d. units to zero. Negative values would be numerically equal but positive in sign. The corresponding quartiles are derived from S.E.$_{\text{est}}$ and the normal distribution. The way in which high (or low) initial scores are accompanied by greater regression to the mean is clearly seen in the rows of the table. In the columns, e.g. for +2 s.d., from 3 years, it can be seen how, with the falling r as the interval increases, the amount of regression to the mean rises, reaching −1·03 s.d. (21 I.Q. points) for the 3 to 14 years interval, compared with −0·44 s.d. (nine I.Q. points) between 3 and 5 years when r_{12} is as high as 0·78. With initial score of 0, the median expected change is, of course, 0, but 25% of subjects will rise, and 25% fall, by at least the amounts indicated for Q_3 and Q_1.

The extent of variation around predicted values, is best indicated by the standard error of the estimate (S.E.$_{\text{est}}$), which, for the high correlation of 0·78 between 3 and 5 years (Table 6) is still as high as 0·63. This is also the value of the coefficient of alienation. Thus, taking account of the correlation has only led to a reduction of variability around predicted values to 0·63, as compared with 1·0 ($= S_y$), if the correlation were zero. Low values of r are accompanied by a quite trivial reduction (Table 6). It can also be seen that it is only with low values of r that S.E.$_{\text{est}}$ is substantially lower than the standard deviation of difference scores (s_d),[‡] despite the fact that this takes no account of level of initial score. To make a more direct comparison of the extent of variation about regression with the change score distributions of Tables 4 and 5: assuming normality, approximately 50% of subjects will have scores differing from the median predicted value by ±0·675 S.E._{est} or more, equivalent for the 3 to 5 years interval, with the high correlation of 0·78, to ±0·43 s.d. (or nine points of I.Q.) (Table 6). This is only trivially less than the expected median absolute change of 0·44 (Table 5), and is greater than the obtained median change of 0·39. Corresponding figures for the 3 to 14 years interval, with the lower r of 0·48, are a semi-interquartile range of ±0·59 s.d. around predicted values (Table 6), compared with expected median absolute change of 0·68 s.d., and obtained of 0·61 s.d. (Table 5). However, although variation around regression is commonly not markedly lower than variation in difference scores, a regression approach takes account of initial score level in a way that difference scores do not. Both shift and variability are higher when r is low (Table 6).

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[*] $r' = (r_{12} - 1)/s_d$, which in our case becomes $(r_{12} - 1)/\sqrt{(2 - 2r_{12})}$, where s_d is the standard deviation of difference scores (see McNemar, 1969, formula 10.27).

[†] Estimated $y' = r_{12}x$, for standardized variables, and the difference (d') between x and y' is given by $d' = y' - x = r_{12}x - x$; x is initial score, y is second score, d' is estimated difference score, and y' is estimated score on second occasion.

[‡] In our case S.E.$_{\text{est}} = \sqrt{(1 - r_{12}^2)}$ = coefficient of alienation, and $s_d = \sqrt{(2 - 2r_{12})}$.

Effects of test unreliability

The foregoing is all concerned with empirical relationships between test scores over varying intervals. The theoretical question arises as to the extent of "true" change, when the unreliability of the measures is corrected for attenuation (McNemar, 1969, p. 171). The short-term re-test reliability of the Stanford–Binet is approximately 0·90, and that of the Griffiths Scale is probably about 0·80 (Hindley, 1960). In Table 7, for selected values of obtained r, the changes resulting from correcting for reliabilities of 0·90 and 0·80 are presented. It can be seen that when obtained r is 0·30 and reliability of 0·80 is corrected for, there is only a minor reduction in the expected median changes, and that S.E._{est} is only trivially affected. Low obtained rs from initial baby tests cannot, therefore, be attributed to test unreliability. With obtained rs of around 0·50, a little below the level found for the Stanford–Binet over longer intervals, and assuming reliability of 0·90, expected median change is reduced by a mere 12%, and S.E._{est} by only 5%. It is only with r as high as 0·80 that expected median change on the Stanford–Binet is approximately halved, and S.E._{est} is reduced by about a quarter. Looked at in terms of common variance of scores at two ages, estimated by r^2, with obtained r of 0·30, correction for reliability of 0·80 increases it from 9 to 14%; with obtained r of 0·50 and reliability of 0·90, correction increases it from 25 to 31%. Again it is only with high values of r around 0·80, which applies between 5 and 11 years, and for several values from 8 years, that "true" common variance attains 80% compared with obtained common variance of 64%. In these instances it is certainly justifiable to conclude that true scores on two occasions have a great deal in common, and that expected median change in true scores would be small.

Amounts of change and social class

Change scores are not the best way of investigating the relationship between I.Q. trends and social class indices, and a more adequate analysis will be the subject of a subsequent publication. In brief, correlations of change scores, taking account of sign, with seven social class indices taken at birth, and three at 14 years, revealed fairly consistent tendencies. From 6 and 18 months gains show low positive correlations with the social class indices, significant in 78 out of 110 instances ($P < 0·05$). Thereafter, few coefficients are above chance level, but there is a suggestion of a negative relationship between social class and gain from 8 and 11 years.

TABLE 7. EFFECTS OF CORRECTING FOR TEST UNRELIABILITY ON CORRELATIONS, VARIABILITY, AND EXPECTED CHANGES TAKING ACCOUNT OF REGRESSION

					Expected changes for initial score of:								
					+ 2 s.d. units			+ 1 s.d. unit			0 s.d. units		
	r	r'	s_d	S.E.$_{est}$	Q_1	Mdn	Q_3	Q_1	Mdn	Q_3	Q_1	Mdn	Q_3
obtained	0·30	− 0·59	1·18	0·95	− 2·04	**− 1·40**	− 0·76	− 1·34	**− 0·70**	− 0·06	− 0·64	**0·00**	0·64
$r_{xx} = 0{\cdot}90$	0·33	− 0·58	1·15	0·94	− 1·97	**− 1·33**	− 0·70	− 1·30	**− 0·67**	− 0·03	− 0·63	**0·00**	0·63
$r_{xx} = 0{\cdot}80$	0·38	− 0·56	1·12	0·93	− 1·87	**− 1·25**	− 0·63	− 1·25	**− 0·63**	0·00	− 0·62	**0·00**	0·62
obtained	0·50	− 0·50	1·00	0·87	− 1·58	**− 1·00**	− 0·42	− 1·08	**− 0·50**	0·08	− 0·58	**0·00**	0·58
$r_{xx} = 0{\cdot}90$	0·56	− 0·47	0·94	0·83	− 1·45	**− 0·89**	− 0·33	− 1·00	**− 0·44**	0·11	− 0·56	**0·00**	0·56
$r_{xx} = 0{\cdot}80$	0·62	− 0·43	0·87	0·78	− 1·27	**− 0·75**	− 0·23	− 0·90	**− 0·38**	− 0·15	− 0·52	**0·00**	0·52
obtained	0·80	− 0·32	0·63	0·60	− 0·80	**− 0·40**	0·00	− 0·60	**− 0·20**	0·20	− 0·40	**0·00**	0·40
$r_{xx} = 0{\cdot}90$	0·89	− 0·24	0·47	0·46	− 0·53	**− 0·22**	0·08	− 0·42	**− 0·11**	0·20	− 0·31	**0·00**	0·31
$r_{xx} = 0{\cdot}80$	1·00	0·00	0·00	0·00	0·00	**0·00**	0·00	0·00	**0·00**	0·00	0·00	**0·00**	0·00

r_{xx} is the re-test reliability; other symbols as in Table 6.

Correlations of amounts of change, regardless of sign, with social class indices show the extent to which volatility of scores is related to social class. In the total sample 20 out of 210 correlations were significant ($P < 0{\cdot}05$), all in a positive direction, with values between 0·16 and 0·23; among girls 24 out of 210 were significant, 20 positive, 17 ranging from 0·24 to 0·32, and four negative ranging from −0·25 to −0·29; and among boys 17 out of 210 were significant, 15 positive, ranging from 0·22 to 0·37, and two negative. Given that the indices, and therefore the correlations, are not independent of each other, the level of correlations cannot safely be taken to be above chance expectancy, suggesting a lack of relationship between social class measures and absolute amounts of change in scores.

DISCUSSION AND CONCLUSIONS

Generalizability of the findings

A problem which confronts any longitudinal study of the present type is the extent to which findings can be generalized to a wider population. Although the attempt was made to obtain an unselected sample (Moore *et al.*, 1954), obviously the cooperation of both parents and children was an important factor in continuing to attend for investigation. There is also a suggestion (see The Sample) of a selective loss according to social class criteria. Furthermore "leavers" had lower mean I.Q.s than "stayers", and stayers displayed a rising trend of I.Q. (Table 3). It might therefore be tempting to dismiss the present results, on the sort of grounds put forward by Schaie (1972, 1973). Were it possible, as he suggests, to administer individual tests to the same subjects only twice, at a series of ages, and over a systematic series of intervals, using large and representative samples, there would obviously be no need to present data of the kind reported here. As this has not, as yet, proved possible, one either rejects the present findings out of hand, or attempts to evaluate how representative they are likely to be (Hindley, 1972). The following points seem pertinent:

1. Although the sample is above average in I.Q. scores, and stayers score higher than leavers, there is no evidence of a significant relationship between score level and volatility of scores.
2. The rising trend of scores among the stayers cannot be attributed to simple selective loss from the sample between 6 months and 17 years, because the figures are based on the same subjects throughout. Selective loss would rather be of subjects who were going to display horizontal or falling curves of I.Q. scores.
3. Intensive longitudinal studies typically find a rising trend of I.Q. in their samples. It is not possible to estimate how far this may be due to genetic factors, to more favoured home backgrounds, or to the type of practice effects described by Wiseman and Wrigley (1953), Sattler and Theye (1967), and Schaie (1972). Although this is the common trend, McCall *et al.* (1973, p. 3) do cite unpublished data in which "a longitudinal study of black children from predominently disadvantaged environments has shown a progressive decline in I.Q. between the ages of 5 and 10 years (Roberts *et al.*, 1965)."

4. While any simple arithmetical effects of the rising trend in mean scores have been eliminated by the method of standardization, and while volatility of scores is probably little affected (see 1. above), it is difficult to evaluate precisely the extent to which our estimates of regression effects is generalizable, so that they should be regarded as rough indications.
5. Important evidence of representativeness of the present findings comes from comparing them with results from other studies. Table 1 indicates that our obtained changes in scores are substantially lower than those of Ebert and Simmons (1943) and Honzik *et al.* (1948), and Table 5 that they are slightly lower than those of Pinneau (1961). They are of a similar order to those found by Bradway (1944) in her follow-up of the Stanford–Binet standardization sample. Our generally smaller amounts of change may reflect the small number of testers involved, as well as elimination of change in means from age to age. In practice, therefore, when these considerations do not apply, and when children are likely to be less familiar with both the tester and the test situation, larger changes in I.Q.s can be expected.
6. The present results depend on the use of three tests. To the extent that the Griffiths Scale is similar to other baby tests, and that the Stanford–Binet is widely used, they are probably applicable to many instances of the use of these or similar tests. The AH4 is less widely used, and there is much less information concerning its psychometric properties than is the case with the Stanford–Binet. Hence, results involving 14 and 17 years are likely to be less widely generalizable.

In sum, despite geographical and temporal differences in sampling, and differences in sample size, the present results show only minor departures from Pinneau's (1961) in the stability of scores across comparable ages. This would suggest that secular and cohort effects can be less serious than Schaie (1973) suggests.

Implications of amounts of change (volatility)

That I.Q. scores are unstable has been clear for a long time, both from studies of I.Q. change and of correlations across age. What has not been sufficiently emphasized is the frequency of large changes in score, even when there are statistically significant, and substantial, correlations. It is hoped that the accompanying tables will do something towards remedying this.

As correlations between baby-test scores and later I.Q.s are low, it is not surprising that large shifts in score are to be found from testings in infancy. Correlations between later testings are substantially higher, so that the test user might be tempted to assume that a child's score will remain fairly constant. In fact, between 3 and 17 years half the children tested will change only by 10 I.Q. points or less. On the other hand, of course, half the children will change by more than 10 points, and a quarter by 20 points or more. In the primary school period alone, a quarter will change by at least 15 points. Moreover, the tester cannot know towards which end of the spectrum any child will fall. Thus, selecting children for different types of school at 11 years, although perhaps administratively convenient, is very hazardous from the standpoint of the educational welfare of the individual child: even between 11 and 17 years we found that more than half the children changed by 10 points, and a quarter by 19 or more.

Implications of direction of change

In addition to the overall study of amounts of change, account also needs to be taken of systematic effects of level of initial score. As the correlation between scores at any two ages is always below unity, there will always be a general tendency for the second scores to regress towards the mean, by amounts which will be greater when initial scores are extreme, and when the correlation between scores at two ages is low.

This regression towards the mean reflects the influence of three factors: (a) imperfect short-term reliability of the tests; (b) changing composition of the tests; and (c) true changes in relative ability over time. As has been pointed out, correction for test unreliability substantially reduces regression effects only when they are in any case relatively small because the correlation between scores at two ages is high (Table 7). This tends to occur over shorter intervals. Most of the larger regression effects are attributable predominantly to a mixture of (b) and (c), which cannot be disentangled here.

A consequence of the regression phenomenon is that any group of low-scorers can be expected to show a gain in mean score on a second occasion without any intervention, and to be able to attribute this to any remedial treatment requires that it be significantly greater than the expected value. Commonly in research the problem is best met by employing a control group. However, this is not possible in clinical work with individuals where the same kind of issue arises frequently. From Table 6 the probability of changes of various amounts in the normal course of events can be estimated, and only if obtained changes towards the mean are considerably greater is it at all justifiable to attribute them to any intervention that may have been made.

It must also be recognized that just as children display a wide range of variation in their change scores, so they do around scores predicted from regression, and of a similar order of magnitude except when the correlation between two ages is very low (Table 6). Here, too, while in instances of favourable or unfavourable change in the environment the practitioner may have good reason to expect shifts above or below the regressed value, in many others he will have no good reason for expecting the one outcome rather than the other. Moreover, variations in standardization sample means at different ages, and between means of populations under consideration compared with the standardization population, will both lead to greater shifts in s.d. scores than reported here.

Score change in relation to other factors

The lack of any relationship between volatility of scores and initial score level is consistent with Pinneau's findings, and provides no support for the contention of Terman and Merrill (1937) of greater volatility among high scorers. The difference is probably due to the method of test standardization then employed, which, being based on mental age, inevitably yielded increasing standard deviations with higher scores. This effect is eliminated when Pinneau's (1961) deviation I.Q.s are employed.

Finally, as is clear from Table 7, the large shifts from scores on baby tests to subsequent I.Q.s, and correspondingly low correlations, cannot to any substantial degree be attributed to test unreliability. They must therefore reflect a mixture of genuine changes in relative status of the subjects and of changes in the abilities being measured.

SUMMARY

Using a London longitudinal sample of 109 subjects from varied social backgrounds, changes in I.Q. scores between every pair of eight ages from 6 months to 17 years are presented. Comparisons are made with Pinneau's (1961) results on a Californian sample born a generation earlier. The systematic tables include medians and quartiles of signed changes, absolute changes, and changes to be expected on the basis of regression. Between 3 and 17 years, scores of 50% of subjects changed by 10 points or more, and 25% by 22 points or more; between 8 and 17 years equivalent figures are 10 and 17 points. Changes are larger from infancy scores. By presenting the amounts of change alongside the more familiar correlations, it is clear that high correlations are compatible with substantial amounts of change. In addition to their research interest, it is hoped that the tables will be of value to practitioners in the educational and clinical fields as providing estimates, which are almost certainly conservative, of changes to be expected in ordinary practice.

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A COMPARATIVE STUDY OF INFANTILE AUTISM AND SPECIFIC DEVELOPMENTAL RECEPTIVE LANGUAGE DISORDER—IV. ANALYSIS OF SYNTAX AND LANGUAGE FUNCTION

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INTRODUCTION

A DISORDER of language has been recognized as a cardinal symptom of infantile autism since Kanner's (1943) first delineation of the syndrome. In 1946, he described "autistic language" as characterized by echolalia, metaphorical substitutions, transfers of meaning through analogy and generalization, literalness, pronoun reversals and verbal negations. Since Kanner's early papers, a variety of studies based on either parental reports and clinical investigation (e.g. Rutter, 1965; Rutter *et al.*, 1967; Bartak *et al.*, 1975; Bartak and Rutter, 1976; Pronovost *et al.*, 1966; Wing, 1969; Kolvin *et al.*, 1971) or spontaneous language samples (Wolff and Chess, 1965; Weiland and Legg, 1964; Cunningham, 1968; Cunningham and Dixon, 1961; Goldfarb *et al.*, 1972; Shapiro *et al.*, 1972, 1974; Ward and Hoddinott, 1968) have broadly confirmed Kanner's observations.

Attention has particularly focused on the nature of autistic children's echoing. Echolalia occurs in a wide variety of conditions including mental retardation, congenital blindness and acquired aphasia, as well as being a normal feature of early language development (Fay, 1966, 1973). Accordingly, there have been various attempts to subclassify different types of echoes. Wolff and Chess (1965) suggested two differentiations; between immediate repetition of the preceding utterance and delayed echoing, and between communicative and non-communicative echoing. Cunningham (1968) distinguished between immediate echoes that were repetitions of the child's earlier utterance and those that repeated someone else's utterance. Shapiro *et al.* (1970) made five categorizations according to the actual structure or form of the echo: (a) "congruent imitations" or exact repetitions of the whole or of part of the utterance; (b) "non-grammatic imitations" which repeat some of the utterance, but in a syntactically impermissable word order; (c) "jargon imitations" which involve the addition of nonsense words; (d) "telegraphic imitations" which involve the deletion of words or morphemes from the original utterance; and (e) "mitigated imitations" which involve some grammatical restructuring of the utter-

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ance. "Congruent imitations" were found to be more frequent in autistic than in normal children.

It has been suggested that the types of echoes found in autistic language may provide diagnostic and prognostic insights (Shapiro *et al.*, 1970; Risley and Wolf, 1967; Griffith and Ritvo, 1967; Fay and Butler, 1968; Fay, 1969). Fay (1967a, b, 1969), after studying language disordered children, concluded that echoing is correlated with poorer language acquisition than non-echoing, and, that in echoers, those who had a high incidence of mitigated echoes had a higher verbal ability than those who employed other types of echoes. This is in keeping with Stengel's (1947) earlier observation that in adult aphasia mitigated echoes are associated with progress in regaining language. Stengel (1947, 1964) considered that echolalia reflected an attempt to overcome impaired understanding by identification with the speaker.

These findings and suggestions are important in providing research leads but the results are not conclusive in themselves. In the first place it is well established that in normals echolalia is negatively related to the level of language competence, but none of the studies have adequately equated groups on linguistic skills. Second, comparisons of autistic children with normals is unsatisfactory in itself because it fails to differentiate between features which are specifically characteristic of autism and those which are generally characteristic of children with any form of severe language delay. In an attempt to meet these needs this paper provides a systematic comparison of well-matched groups of autistic and developmental "dysphasic" children. Language comparisons between autistic children and children with developmental dysphasia (Millman and Canter, 1972; De Hirsch, 1967; Savage, 1968) have generally recognized certain common features including inferior auditory discrimination, echolalia, limited verbal output, conceptual deficits and articulation problems. On the other hand, auditory memory span, use of gesture and amount of communicative intent have been thought to differentiate the groups. An earlier report of psychometric findings from our study (Bartak *et al.*, 1975) provided strong empirical support for some of these views. In spte of the groups being closely similar in terms of mean utterance length and grammatical complexity (as reported by parents), the autistic children had a more serious impairment in language comprehension (as measured by the Reynell and Peabody* scales) and a more pervasive defect in verbal cognition (as shown by a quite different pattern of WISC subtest scores) in contrast to comparable non-verbal cognition (as indicated by scores on the Columbia, Raven and WISC performance scales†). Thus, there was good evidence that autistic and dysphasic children differed markedly in patterns of cognitive performance. On the other hand, the evidence on syntactical language skills and functional use of language was limited to parental interview reports. These showed that the groups were comparable with respect to grammatical competence but differed in terms of "abnormal" features such as echolalia and metaphorical language. It remained to test these impressions by a more detailed and rigorous quantitative analysis of spontaneous language samples using methods known to be reliable and valid (Cantwell *et al.*, 1977).

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*Reynell (1969); Dunn (1959).

†Burgemeister *et al.* (1954); Raven (1965); Wechsler (1949).

METHOD

Sample

The initial sample was collected to provide a group of boys of normal non-verbal intelligence who had a severe developmental impairment of language comprehension (see Bartak *et al.*, 1975, 1977; Cox *et al.*, 1975). Major treatment or educational units within the United Kingdom concerned with either autistic children or children with uncomplicated language disorders were contacted to obtain boys between the ages of 4 yr 6 months and 9 yr 11 months with a non-verbal I.Q. of at least 70, who had a current disorder of language comprehension which had been present from infancy and which was not due to overt neurological disorder or peripheral deafness. There were 19 autistic boys, 23 "dysphasic" boys and five with a mixed disorder. The present study concerns a follow-up of a proportion of the autistic and "dysphasic" groups some 2 years after the initial investigation.

Of the original 19 autistic children, two were overseas or untraceable and two were unwilling to participate further in the study. The overall follow-up concerns the remaining 15 cases but the present report refers to just 12 of them. Two families were seen for interview and testing but language samples were not obtained due to D.C.'s return to the U.S.A. before this could be arranged. In addition one non-speaking child has not been included in the present language analyses.

Of the original 23 "dysphasic" children, six of the oldest with the least language disability were deliberately omitted in order to match the groups more closely. Two further cases had moved and could not be contacted. The overall follow-up concerns the remaining 15 cases but the present report refers to just 12 of them. As in the autistic group, one non-speaking child was seen but not included in the present analyses and in two cases language samples could not be obtained prior to D.C.'s return to the U.S.A. The remaining groups of 12 autistic and 12 "dysphasic" boys were closely matched in age and non-verbal I.Q. (see Table 1). When originally seen they had also been closely comparable in mean utterance length (as reported by parents) and in mean Reynell expressive language score (Reynell, 1969). The autistic group all met the diagnostic criteria (Kanner, 1943; Rutter, 1971, 1977) of an onset before age 30 months, a profound and general failure to develop social relationships, ritualistic or compulsive phenomena, and seriously delayed and deviant language. The clinical characteristics are more fully described in Bartak *et al.* (1975).

TABLE 1. SAMPLE CHARACTERISTICS

	Autistic (n = 12) Mean	"Dysphasic" (n = 12) Mean
Age at follow-up	9 yr 2 months	9 yr 11 months
WISC perf. scale I.Q.	92·9	95·8
Initial utterance length (words)	4·6	4·7
Initial Reynell expression	49·0	53·2

Language measures

Language samples were obtained from an hour and a half's audio tape recorded session in the child's own home at a time when the mother was free to be with the child throughout the session. In order to make the sessions as comparable as possible, the mother was asked to be free of other obligations (such as cooking a meal) and to try to ensure that other children were not present. Otherwise the mothers were simply told to do as they would normally when looking after their child. Analyses were based on the first half hour's recording following an initial 15 minute "warm-up" period as this proved to be the most satisfactory (Howlin *et al.*, 1973). All utterances made by the child during this time were analysed using methods previously developed and tested (Cantwell *et al.*, 1977).

In order to assess the children's level of syntactical usage, analyses were made of morpheme rules, phrase structure rules and transformational rules using non-echolalia utterances. The nine morphemes examined were the present progressive (ing), the plural (s), the past tense (ed), the possessive ('s), the third person present (s), the case morpheme for pronouns, the possessive morpheme for pronouns, the adjectival comparative (er) and the adverbial formation (ly). Phrase-structure rules were considered in terms of noun phrase, verb phrase, prepositional phrase, simple sentence and complex sentence. Five transformational rules were examined: imperative, question inversion, wh- inversion, negation and use of "do" in negative and interrogative sentences. Inter-rater reliability was 75% or better in all instances and exceeded 90% for most categories. For each child, acquisition of each structure was scored on a 0 to 3 scale according to the normal stages of development (Bloom, 1970; Menyuk, 1969; Brown, 1973) (0—no usage of the specified structure; 1—some correct usage but frequent omission; 2—generally correct usage but with errors of redundancy or overgeneralization; and 3—errorless use of regular and irregular forms).

Functional language usage was analysed in terms of five socialized speech categories (questions, answers, spontaneous remarks, directions and appropriate or prompted immediate echoes) and four "abnormal" or egocentric speech categories* (inappropriate immediate echoes, thinking aloud or action accompaniments, metaphorical language, and delayed echoes) together with codings for "automatic" language (hello, please, etc.), non-verbal utterances (grunts, humming, etc.), and "other". Inter-rater reliability was 92% or better for all categories.

In addition, immediate echoes were subclassified according to the subdivisions proposed by Wolff and Chess (1965), Cunningham (1968) and Shapiro *et al.* (1970).

RESULTS

1. *Syntactical analysis*

Table 2 presents the autistic–dysphasic comparisons for morphological rule usage. This comparison is based on 11 children in each group as one autistic and one dysphasic child without inflections in their speech had to be omitted. The groups were broadly similar with respect to both their total morphological rule score and also their general patterns of usage. For both groups the children were most proficient with the present progressive, the plural and the past tense; and least proficient with the adjectival comparative and the adverbial formation. The only significant difference concerned the third person present where the autistic group showed a more correct usage. Overall, the autistic children were slightly more advanced in their morphological rule usage but the within-group variance was large and the between-group difference fell well short of statistical significance.

TABLE 2. MORPHOLOGICAL RULES*

Rules	Groups			
	Autistic (n = 11)		Dysphasic (n = 11)	
	Mean	(S.D.)	Mean	(S.D.)
Present progressive (ing)	1·55	(1·44)	2·36	(1·21)
Plural (s)	2·55	(0·82)	2·00	(1·18)
Past tense (ed)	1·55	(1·51)	1·27	(1·49)
Possessive ('s)	1·00	(1·34)	0·27	(0·90)
Third person present (s)	2·25	(1·27)	1·00	(1·34)†
Pronoun case (I, us, me, etc.)	0·91	(1·38)	1·19	(1·47)
Pronoun possessive (I, us, my, mine, etc.)	0·82	(1·40)	0·91	(1·38)
Adjectival comparative (er)	0·27	(0·90)	0·09	(0·30)
Adverbial formation (ly)	0·55	(1·21)	0·00	(0·00)
Total morphological rule score	11·45	(5·47)	9·09	(6·06)

*Each rule scored in terms of 0—no usage; 1—some correct usage but frequent omissions; 2—generally correct usage but errors of redundancy or overgeneralization; 3—errorless use of regular and irregular forms.

†$t = 2·35$; 20 d.f.; $P < 0·05$. All other differences non-significant.

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*These are all defined in Cantwell *et al.* (1977).

TABLE 3. PHRASE STRUCTURE RULES

	Groups			
	Autistic ($n = 12$)		Dysphasic ($n = 12$)	
Rules	Mean	(S.D.)	Mean	(S.D.)
Noun phase	2·33	(1·07)	2·50	(0·80)
Verb phrase	2·50	(0·80)	2·75	(0·45)
Prepositional phrase	1·92	(1·44)	1·83	(1·34)
Noun phrase and verb phrase	2·50	(0·90)	2·17	(0·94)
Complex sentence	0·42	(0·90)	0·33	(0·78)
Total phrase structure rule score	9·67	(3·55)	9·58	(3·03)

No differences statistically significant.

Table 3 summarizes the phrase structure rule comparisons. Again the groups are closely comparable. Few children were correctly using complex sentences but most were reasonably proficient with the other rules. No differences reached statistical significance.

TABLE 4. TRANSFORMATIONAL RULES

	Groups			
	Autistic ($n = 12$)		Dysphasic ($n = 12$)	
Rules	Mean	(S.D.)	Mean	(S.D.)
Imperative	2·42	(1·16)	2·33	(1.15)
Question	1·00	(1·28)	1·25	(1·29)
"Do" support	2·08	(1·38)	1·50	(1·45)
"Wh" inversion	2·25	(1·22)	1·92	(1·31)
Negation	2·17	(1·34)	2·08	(1·31)
Total transformational rule score	9·92	(4·25)	9·08	(3·73)

No differences statistically significant.

The findings for transformational rules also showed no significant differences between the autistic and "dysphasic" groups. The groups were closely comparable overall and their patterns of usage were very similar with the children in both groups least proficient with the question transformation.

2. *Functional analysis*

The main types of functional usage of language are summarized in Table 5. The "dysphasic" children used significantly more socialized speech. Within this broad category the main difference concerned spontaneous remarks which were more than twice as frequent in the "dysphasic" group. There was also an impression of a further qualitative difference between the autistic and dysphasic children in the types of spontaneous remarks made. Several autistic children showed an inflexible adherence to particular topics: one insisted on talking about only rain and black clouds; another persistently spoke about blowing bubbles; and a third kept referring (out of context) to his penny collection. Of course, "dysphasic" children also sometimes tended to confine their remarks to some primary topic but this usually concerned some game or ongoing activity.

It should be noted that the groups did not differ in their usage of appropriate or prompted immediate echoes which accounted for some 10% of utterances used by both autistic and dysphasic children.

However, "abnormal" or egocentric usage was very much more common in the autistic group, accounting for over 18% of utterances compared with less than 3% in the dysphasic group. Delayed echoes scarcely ever occurred with dysphasic children whereas they accounted for some 5% of autistic utterances. Just over half of these were judged uncommunicative and just under half communicative but this difference did not prove to be a particularly useful one. Thinking aloud and action accompaniments were also types of usage which were almost entirely confined to autistic children, although in this case the difference fell short of statistical significance.

TABLE 5. FUNCTIONAL USAGE OF LANGUAGE

Type of usage	Groups				
	Autistic ($n = 12$) Mean %	(S.D.)	Dysphasia ($n = 12$) Mean %	(S.D.)	Significant t (P value)
Questions	2·67	(4·75)	6·25	(8·74)	NS
Answers	34.67	(17·10)	24·50	(17·98)	NS
Spontaneous remarks	20·75	(13·78)	45·08	(16·69)	3·89 ($P < 0·002$)
Directions	2·50	(2·32)	3·17	(4·06)	NS
Appropriate/Prompted immediate echoes	8·75	(7·41)	10·92	(9·29)	NS
Total SOCIALIZED SPEECH	69·34	(20·48)	89·92	(4·76)	3·39 ($P < 0·01$)
Inappropriate immediate echoes	5·91	(9·24)	2·33	(3·23)	NS
Thinking aloud/action accompaniments	6·25	(13·05)	0·17	(0·39)	NS
Metaphorical	1·00	(2.22)	0·17	(0·39)	NS
Delayed echoes	5·25	(7·83)	0·08	(0·29)	2·29 ($P < 0·05$)
Total "ABNORMAL" SPEECH	18·41	(18·24)	2·75	(3·28)	2·93 ($P < 0·01$)
Automatic	7·08	(7·76)	3·33	(4·05)	NS
Non-verbal	3·17	(2·08)	2·92	(1·38)	NS
Other	2·00	(2·56)	1·08	(1·24)	NS
Total AUTOMATIC/NON-VERBAL/OTHER	12·25	(6·77)	7·33	(3·26)	2·27 ($P < 0·05$)
No. of utterances	126	(87·19)	130	(71·45)	NS

It is apparent that the variance is very large for all categories of "abnormal" or egocentric usage. This reflects the fact that whereas some autistic children show a lot of such usage, some show none at all. Accordingly, it may be more meaningful to consider the findings in terms of numbers of individual children rather than group means. These findings are summarized in Table 6. The findings are striking. Whereas none of the dysphasic children showed more than 1% usage of delayed echoes, thinking aloud/action accompaniments, or metaphorical language,* seven of the 12 autistic children did so ($\chi^2 = 7·261$; 1 d.f.; $P < 0·01$). Of the five autistic children who did not show these "abnormal" or egocentric features during the ½ hr language sample which was analysed, four were notable for their low rate (< 30%) of spontaneous remarks. In the group of 12 "dysphasic" children, 10 used at least

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*As used here, metaphorical language refers to idiosyncratic utterances whose meaning cannot be determined (see Cantwell *et al.*, 1977), and hence its inclusion with apparently "abnormal" language features.

30% spontaneous remarks whereas only two of the 12 autistic children did so ($\chi^2 = 8{\cdot}17$; 1 d.f.; $P < 0{\cdot}01$). In short, at the individual as well as the group level there were marked differences between autistic and "dysphasic" children in their functional usage of language.

TABLE 6. INDIVIDUALS WITH "ABNORMAL" USAGE LANGAUGE

	Autistic (No. with > 1% usage)	Dysphasic (No. with > 1% usage)
Delayed echoes	5	0 ($P = 0{\cdot}18$)
Thinking aloud/action accompaniment	5	0 ($P = 0{\cdot}018$)
Metaphorical language	2	0 (N.S.)
Any of above	7	0

The two groups did not differ in their mean number of utterances but autistic children made significantly more automatic/non-verbal/other utterances—a mixed bag of "hello's", grunts, hummings and the like.

Finally, a more detailed analysis of types of immediate echoes was made using categories developed by other workers. No significant differences were found between autistic and dysphasic children with respect to the use of exact, reduced, expanded or mitigated echoes of other people as described by Shapiro *et al.* (1970). In both groups, most immediate echoes were exact or reduced (4·5 and 3·8% of utterances, respectively, in the autistic group and 7·4 and 2·1% in the dysphasic group) and very few were expanded or mitigated (0·4 and 0·4%, respectively, in the autistic group and 1·3 and 0·0% in the dysphasic group). Similarly, no significant differences were found between autistic and dysphasic children with respect to the proportions of utterances which were immediate echoes of self rather than of others (Cunningham, 1968) or of the proportions which were appropriate or inappropriate. On the other hand, there was a tendency for autistic children to make more use of inappropriate echoes of themselves (4·75% of utterances compared with 0·75% in the dysphasic group—$t = 1{\cdot}66$). This difference fell short of statistical significance because of the very large standard deviation in the autistic group (8·28), which implied that some autistic children did this a lot whereas others did not do it at all. Examination of individual findings confirmed that this was so and indicated that substantial usage of inappropriate echoes of self was only found in the autistic group. Thus, five of the 12 autistic children showed more than 4% usage* but none of the 12 dysphasic children did so (Exact test, $P = 0{\cdot}018$). It should be noted that two of these five did not show delayed echolalia, thinking aloud/action accompaniments, or metaphorical language. Thus if these two criteria are both taken into account, nine of the 12 autistic children but none of the dysphasic group show one or both features.

DISCUSSION

The findings of our detailed quantitative analysis of natural spoken language samples clearly indicate that the main difference in language expression between autistic and "dysphasic" children of normal non-verbal intelligence concerns functional language usage. Whereas over half of the autistic group showed an appreciable amount of delayed echolalia, thinking aloud/action accompaniments or metaphorical language none of the "dysphasic" group did so. Immediate echolalia was a less satisfactory discriminating item as it occurred with about the same frequency in both groups. However, the nature of the echoing did differentiate the groups to some extent. Autistic type echoing was distinguished by two characteristics: (a) the inappropriateness of what was said, and (b) the echoing by the child of what he himself (rather than someone else) had just spoken. This was twice as common in the autistic group and was found to a marked degree only in autistic children. The form of the echo (in terms of whether it was exact, reduced, etc.) did not prove to be a useful discriminating feature.

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*Eight of the 12 autistic children and four of the 12 dysphasic children showed more than 1% usage.

For the most part, these findings are in striking agreement with earlier results based on parental reports (Bartak *et al.*, 1975),* However, the present analyses extend knowledge on the differentiation between various types of echolalia (a differentiation not possible on parental accounts). It is clear that only certain varieties are characteristic of autism. Autistic children's language differs most markedly in having components which are both inappropriate and egocentric. In short, it is the deviance of spoken language rather than the delay in its development which is most characteristic of autism. Of course, autistic children are also usually severely retarded in language development, but severe language delay is found in many conditions. What our findings demonstrate is that even after due allowance has been made for language level, the functional usage of language by autistic children is different from that of other children. In addition to the presence of "abnormal" or egocentric features, their language is also characterized by a relative paucity of spontaneous remarks. Whereas these accounted for over a third of the expressive language output in 10 out of the 12 dysphasic cases, this was so for only two out of 12 autistic children.

Altogether, there was surprisingly little overlap between the groups on these language items. On the other hand, there was some. Three of the 12 autistic children showed none of the "abnormal" or egocentric language features to any appreciable degree (although two of these were different from the dysphasic group in having a very low rate of spontaneous remark). Two caveats need to be made with respect to this finding. First, the children were studied at age 10 years and the parental interview findings indicate that abnormalities are most evident at an earlier age. Second, the language analysis applies to a $\frac{1}{2}$ hr sample obtained in the familiar environment of the child's own home. This is important because (a) delayed echolalia, by its very nature, is difficult to identify from just one sample of speech; (b) clinical experience suggests that abnormal language is most evident in an unfamiliar environment when there are high cognitive or linguistic demands (this impression is being tested experimentally); and (c) although longer than those employed in most previous studies, half an hour is still a relatively short period of time. Even so it seems clear that those three autistic children show far less abnormal language than most.

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*An earlier paper based on preliminary analyses (Baker *et al.*, 1976) mistakenly suggested the contrary.

It must also be emphasized that, by age 10 years, the various abnormal features of functional language usage applied to only a minority of what was said by the autistic children. This finding is very much in keeping with the clinical studies showing that, especially in autistic children of normal non-verbal intelligence, language becomes very much more normal in form and content as the children grow older (Rutter, 1970).

It may be concluded then, that the language of autistic children is both deviant and delayed but that it is the deviance which is most characteristic. The question which next arises is whether the deviance is explicable in terms of the severity of language delay. Our syntactical analyses are relevant in this connection. No difference was found between the autistic and dysphasic groups with respect to any of the overall syntactical measures concerned with morphological rules, transformational rules or phrase structure rules. Hence, it is clear that the autistic–dysphasic difference did not lie in any of the aspects of grammatical competence measured in this study. Other investigations have shown quite good agreement between various different measures of morphological rule usage, morpheme length, and transformational complexity (see Brown, 1973; de Villiers and de Villiers, 1973) and it is unlikely that more detailed measures of grammar would show any substantial differences between autistic and dysphasic children in level of grammatical competence. Therefore, the deviance of autistic language is probably not due to any overall impairment in syntactical skills.

On the other hand, it is possible that there could be differences in patterns of syntax which were not detectable by our methods. While our measures of grammar are as discriminating as most measures appropriate for giving comparisons (and have the advantage over many of being of tested reliability and validity), they are still relatively crude. The writing of individual grammars for each might reveal patterns of grammatical errors and omissions characteristic of autism. However, this would be a Herculean task and in view of the poor agreement among linguists on how grammar should be written (Brown, 1973), and the lack so far of any indication of grammatical features specific to autism, probably not worthwhile in the present state of knowledge.

Of course, our analyses refer only to syntax and language expression, rather than comprehension. Could the deviance be due to a greater impairment in other aspects of language competence? To answer that question it is necessary to refer to psychometric test findings. The autistic and "dysphasic" groups were also closely comparable in their expressive language scores on the Reynell scales when the children were first seen 2 years before the language samples were obtained (see Table 1). But they were no longer comparable at follow-up (Bartak, in preparation).* All 12 "dysphasic" children had reached the (72 months) ceiling of the scale whereas only four of the autistic group had done so (their mean score was 56·1 if a score of

*No direct comparisons between our findings and test results are possible because they were obtained at quite different times. Accordingly, the Reynell scores are not reported in detail here but will be fully reported elsewhere (Bartak, in preparation). It should also be noted that the analyses in an earlier paper (Baker *et al.*, 1976) relating echolalia to linguistic ability refer strictly to syntactical competence. Whether the findings would be similar with respect to echolalia and either semantic competence or language comprehension remains uncertain.

72 months is given to those children who had reached the ceiling). As both our measures and the Reynell scales ostensibly measure language expression it is necessary to examine what is measured in more detail. The Reynell expressive language scale has three sections: the first examines syntactical usage; the second vocabulary; and the third assesses creative use of language in describing a picture. The syntactical section accounts for less than a third of the expressive language score. It may well be that autistic children's deficits concern semantic or ideational skills rather than syntax. A detailed analysis of the different sections of the Reynell scales would be useful in testing that suggestion.

Similar issues apply to the verbal comprehension measure from the Reynell scales. At follow-up, nine of the 12 "dysphasic" children had reached the ceiling (overall mean 69·6) whereas only one of 12 autistic children had done so (overall mean 56·4). Thus, there were very marked differences between autistic and dysphasic children. This may be because autistic children are more impaired in language comprehension than language expression, but also it may be because the scale taps the understanding of words and ideas as well as of grammar. This is also suggested by the WISC results (Bartak *et al.*, 1975) which showed that whereas autistic children were severely impaired on the comprehension, similarities and vocabulary subtests, the "dysphasic" children were not.

We conclude that the autistic child's language deviance is probably not primarily due to his greater severity of language impairment as such. Indeed it is probably the case that autism is not usually due to a straightforward language delay at all. By this we mean that it seems that, however severe the delay, autism is unlikely to result provided that it is a straight delay of language development. Autistic children are not particularly impaired in expressive syntactical competence (compared with "dysphasic" children) and they actually tend to be superior in articulation skills (Boucher, 1976). Their language comprehension is usually more severely retarded than that of "dysphasic" children (Bartak *et al.*, 1975), but even so it is not difficult to find "dysphasic" children with very poor comprehension who are not autistic in their behaviour at all. What seems to characterize autism is a different pattern of cognitive skills which is associated with a severe language delay, but in which the disability affects a variety of thought processes which are not ordinarily impaired in children who are merely retarded in language development. It is possible that this cognitive deficit underlies the social and behavioural abnormalities shown by autistic children, but that possibility has yet to be effectively investigated (Rutter, 1974).

SUMMARY

Autistic boys were systematically compared with an age and I.Q. matched sample of developmental "dysphasic" boys on reliable measures of syntax and language functions. The groups did not differ on syntactical usage as determined by morphological, transformational and phrase structure rules. However, autistic children were significantly less likely to make spontaneous remarks and significantly more likely to use delayed echoes, thinking aloud/action accompaniments and inappropriate echoes of themselves. It is concluded that the autistic child's language deviance is not just a reflection of language impairment.

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CHILDREN'S ADJUSTMENT TO SCHOOL OVER SIX YEARS

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INTRODUCTION

As PART of the Schools Council's Research and Development Project in Compensatory Education an intensive study of a sub-sample of 104 children from infant schools in three cities in England and Wales serving "deprived" catchment areas (now termed Social Priority Areas) was carried out. Its main aim was to highlight the effects of cultural disadvantage in the home upon children's school progress and adjustment. The sub-sample comprised a group of 52 children from homes rated as culturally disadvantaged on the basis of an interview at home with one or both parents, matched for age, sex, intelligence and school, together with a group of 52 children from educationally more supportive home backgrounds. A full research report on the study, which was completed in 1972, has been published (Chazan *et al.*, 1977). The opportunity arose to follow up these children at the late junior school stage (final term) and shortly after their entry into secondary school (first term). Ninety-seven children from the original sub-sample of 104 children were located (39 boys and 58 girls) and a comprehensive assessment of their adjustment and attitudes to both junior and secondary school, language skills, school achievements and aspects of their personality was made. A full report on the findings of this follow-up study has been prepared (Cox and Jones, 1977).

As part of the follow-up study assessment programme teachers in both the junior and secondary schools were asked to complete a rating of the children's overall level of school adjustment (part of the Schaefer Classroom Behaviour Inventory, unpublished). This rating scale had also been completed on five separate occasions in the original study during the children's infant school careers. Although different teachers completed the Schaefer ratings during the three broad stages of the children's schooling it was felt that a comparison of the ratings received by the children at these stages might be of interest, both from the point of view of the picture they yielded of the prevalence of poor school adjustment at different ages and also with regard to the consistency of ratings received by each child over the 6 year period covered by the study. This paper presents the results of such a comparison. Of the five sets of Schaefer ratings obtained during the infant school period, for simplicity,

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only two were chosen for comparison with the junior and secondary school ratings, namely those completed during the second term of the children's second and third infant school years. The approximate mean ages of the children on the four occasions chosen were $6\frac{1}{4}$, $7\frac{1}{4}$, $11\frac{1}{2}$ and 12 years. For this comparison the culturally disadvantaged group of children and their controls were combined, although the focus of the intensive study was upon differences between these two groups. It should be borne in mind that the children in this sub-sample came from predominantly "working class" backgrounds (see Chazan *et al.*, 1977) and the majority (approximately 75% at the junior school stage) attended schools designated as serving Educational Priority Areas, as they were then known.

INCIDENCE OF POOR SCHOOL ADJUSTMENT ON FOUR OCCASIONS

Table 1 shows the children's rated level of school adjustment on the four occasions chosen for the study, together with percentage figures for the third infant school year from Chazan and Jackson's (1974) study for comparison. Using the same rating scale those authors studied the prevalence of poor school adjustment in the larger sample of children attending infant schools serving "deprived areas" from which the present sub-sample was drawn in the original study. It is clear from the table that the distribution of ratings on the four occasions is broadly similar, with the majority of children on each occasion being rated as well adjusted or having no significant problems. (A Chi-square test showed that the differences between the four sets of ratings were non-significant.) It will be seen that the percentage of children in the intensive study sub-sample rated as poorly adjusted (ratings of 3 or 4) is highest in the second infant school year and lowest in the secondary school and fluctuates on the intervening occasions. (It should be noted that the secondary school ratings were obtained soon after the children's transfer to the secondary school and, therefore, give only an initial indication of the prevalence of poor adjustment.) Comparison with Chazan and Jackson's figures shows that, in the third infant school year, identical percentages (16%) of children in both studies received poor adjustment ratings, which adds some weight to the findings of the intensive study. What this table does not show, of course, is whether the same children were rated as well or poorly adjusted on the different occasions and this question will now be examined.

CONSISTENCY AMONG THE RATINGS

It would be quite unrealistic to expect a high measure of agreement among these sets of ratings since different teachers will employ somewhat different criteria in judging whether children show signs of disturbance. Moreover, as Coleman *et al.* (1977) suggest, there may be a good deal of situational specificity in children's behaviour. Those authors were commenting on differences in children's behaviour at home and at school but, in the present context, the same children may behave differently with different teachers within the school setting. The following comparisons were made between the sets of ratings using Kendall's "tau" technique, and the results are presented in Tables 2(a)–2(d):

TABLE 1. DISTRIBUTION OF SCHAEFER RATINGS OF CHILDREN'S ADJUSTMENT TO SCHOOL ON FOUR OCCASIONS; COMPARED WITH THAT FROM CHAZAN AND JACKSON'S STUDY

Schaefer rating	Present study $N = 97$								Chazan and Jackson's study (deprived area schools only) $N=279$
	Second year infant school (second term)		Third year infant school (second term)		Fourth year junior school (third term)		First year secondary school (first term)		Third year infants (summer term)
	n	%	*n**	%	*n*	%	*n*	%	%
1. *Well adjusted:* a child who is well adjusted in his relationships with others and in his activities	32	33	35	36	30	31	31	32	38
2. *No significant problems:* a child who gets on reasonably well and has little or no difficulty in adjusting to others or to classroom activities	43	44	46	48	46	47	52	54	46
3. *Somewhat disturbed:* a child who has moderate difficulties in adjusting and to whom growing up represents something of a struggle	21	22	14	15	17	17	13	13	12
4. *Very disturbed:* a child who has, or at his present rate is likely to have serious problems of adjustment and needs specialist help because of such problems	1	1	1	1	4	4	1	1	4

χ^2 (6 d.f.) (categories 3 and 4 combined) = 5·17, N.S.
*Rating for one child in the sub-sample not available.
Note: percentages rounded to nearest whole number.

second infant school year vs third infant school year,
second infant school year vs first secondary school year,
third infant school year vs fourth junior school year,
fourth junior school year vs first secondary school year.

TABLE 2(a). AGREEMENT BETWEEN SCHAEFER RATINGS ON TWO OCCASIONS: SECOND YEAR INFANT SCHOOL VS THIRD YEAR INFANT SCHOOL ($N = 96$*)

Rating		Third year infant school			
		1	2	3	4
Second year infant school	1	20	11	1	0
	2	13	25	4	0
	3	2	10	9	0
	4	0	0	0	1

Value of tau = 0·46, $z = 4{\cdot}95$, $P < 0{\cdot}001$.

*One third infant school rating missing.

TABLE 2(b). AGREEMENT BETWEEN SCHAEFER RATINGS ON TWO OCCASIONS: SECOND YEAR INFANT SCHOOL VS FIRST YEAR SECONDARY SCHOOL ($N = 97$)

Rating		First year secondary school			
		1	2	3	4
Second year infant school	1	15	15	2	0
	2	12	27	4	0
	3	4	10	6	1
	4	0	0	1	0

Value of tau = 0·28, $z = 3{\cdot}10$, $P < 0{\cdot}001$.

TABLE 2(c). AGREEMENT BETWEEN SCHAEFER RATINGS ON TWO OCCASIONS: THIRD YEAR INFANT SCHOOL VS FOURTH YEAR JUNIOR SCHOOL ($N = 96$*)

Rating		Fourth year junior school			
		1	2	3	4
Third year infant school	1	17	14	4	0
	2	13	23	9	1
	3	0	8	3	3
	4	0	0	1	0

Value of tau = 0·34, $z = 3{\cdot}70$, $P < 0{\cdot}001$.

*One third year infant school rating missing.

TABLE 2(d) AGREEMENT BETWEEN SCHAEFER RATINGS ON TWO OCCASIONS: FOURTH YEAR JUNIOR SCHOOL VS FIRST YEAR SECONDARY SCHOOL ($N = 97$)

Rating		First year secondary school 1	2	3	4
Fourth year junior school	1	12	18	0	0
	2	18	24	4	0
	3	0	11	6	0
	4	0	0	3	1

Value of tau $= 0{\cdot}39$, $z = 4{\cdot}21$, $P < 0{\cdot}001$.

It can be seen, first, that despite considerable variation in the ratings received by the same children on the four different occasions, the amount of agreement between the paired sets of ratings reaches statistical significance in all cases. Predictably, however, agreement is highest between those sets of ratings obtained relatively close in time (second year vs third year infants, junior school vs first term secondary school) and lowest between the two ratings separated by the largest interval (second year infant vs first term secondary school). Despite such overall agreement, in each comparison, between 15 and 22% of the children were rated as well adjusted or having no significant problems on the first occasion but somewhat or seriously disturbed on the second, or vice versa, which represents a marked disagreement in these particular cases. Such discrepancies are not unexpected, for the reasons indicated above. In addition, however, such ratings will be subject to a degree of unreliability. Earlier writers, e.g. Warburton (1961) and Thorndike and Hagen (1969) have indicated that global ratings of the type used in the present study are likely to be less reliable than more "molecular" ratings of the type found in behavioural checklists such as the Rutter Scale. [Nevertheless, additional data available in the present study suggest that the Schaefer Rating Scale may have a practicable degree of reliability. Two sets of Schaefer ratings were obtained for the children in the sub-sample over a 2–3 month period during their second infant school year and the relationship between them was examined by means of Kendall's "tau" technique. The test–retest reliability coefficient was approximately 0·62 ($P < 0{\cdot}001$).] [In addition, some data bearing on the validity of the Schaefer Rating Scale were collected in the intensive study at the junior school stage. The class teachers were asked to complete a questionnaire which included not only the Schaefer rating but the complete Rutter Scale (B2). Taking Rutter's (1967) suggested cut-off score of 9 it was possible to compare the classification of children as "normal" or "disturbed" according to the Schaefer Scale ratings with that on the Rutter Scale (a score of 9+ indicating behavioural disturbance). Overall, there was a very highly significant measure of agreement between the two classifications (tau $= 0{\cdot}64$, $P < 0{\cdot}001$), with 86 of the 97 children falling into the same group on the two classifications.]

IDENTIFYING SUB-GROUPS IN THE SAMPLE

It was found that 57 of the 96* children (59%) in the sub-sample for whom complete data were available were judged to be well adjusted (rated 1 or 2) on the four occasions compared, with the remaining 39 children (41%) showing deviant behaviour to some degree (rated 3 or 4) on at least one occasion. Table 2 shows the number of occasions on which the sample children received poor adjustment ratings.

TABLE 3. FREQUENCY OF RATED POOR ADJUSTMENT (SCHAEFER RATING OF 3 OR 4) AMONG CHILDREN OVER FOUR OCCASIONS ($N = 96^*$)

Frequency of child's rated poor adjustment (number of occasions)	n	%	Expected number†
Not at all	57	59	(57)
Once only	19	20	(19)
Twice	8	8	(3·6)
Three times	7	7	(0·75)
Four times	5	5	(0·10)

*Third year infant school rating missing for one child.

†On the assumption that there is no association between a child's rating received on one occasion and those received on subsequent occasions.

It will be seen that approximately half of the children in this sub-group were judged to be poorly adjusted on only one of the four occasions, whilst, in contrast, five children (approximately 12% of the sub-group) were so rated on all four occasions, i.e. from the infant school through to the early secondary school stage, a number greatly exceeding chance expectation. The actual distributions of ratings received by each child in the sub-group were examined and three different patterns were identified, as indicated in Table 4.

TABLE 4. TRENDS IN SCHAEFER RATINGS RECEIVED BY THE POORLY ADJUSTED* CHILDREN OVER FOUR OCCASIONS ($N = 39$)

Trend	n	%
1. Short-term adjustment problems, i.e. rating of 3 or 4 during second or third infant school year only	13	33
2. Good infant school adjustment but problems developing in junior or secondary school or both	12	31
3. Consistently poorly adjusted (ratings of 3 or 4 at each stage of schooling including at least one such rating at the infant school stage)	6	15
4. No clear trend, i.e. fluctuation between ratings of 1 or 2 and 3 or 4	8	20

Percentages rounded to nearest whole number.

*With a Schaefer rating of 3 or 4 on at least one occasion.

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*In the case of one of the 97 children in the follow-up sample some of the relevant infant school data were missing.

The pattern of particular interest is that of persistent deviance (poor adjustment) shown by six* children (two girls and four boys) all from culturally disadvantaged homes† over the period studied. A considerable amount of information about the children's educational histories and their home backgrounds was collected in the course of the follow-up study and this was examined to see if this small group of consistently poorly adjusted children shared any feature which distinguished them from the remaining children. No such feature was found but it is worth noting that all of the children were classified as maladjusted according to the Rutter Scale administered at the junior school stage, although there was no clear trend in the type of maladjusted behaviour shown (anti-social or neurotic). Various deviant behaviour patterns were ascribed to these children by their junior school teachers, ranging from violence and aggression toward other children (three cases) to sulkiness and moodiness (one case) and day-dreaming and a dislike of being touched by adults (one case). In addition, four of the children were seriously backward in reading at age 11+ (reading age below 8·5 years on the Burt Rearranged Graded Word Reading Test), and three came from families which were atypical in the sense that both natural parents were not present. In four of the six cases the junior school teacher completing the questionnaire referred to the child's home background as being disturbed or discordant. In another case the parents were described as hostile and critical in their attitude to the child's school.

Examination of the free comments contained in the questionnaires completed by the infant school, junior school and secondary school teachers on these six children showed that in at least three cases the nature of the deviant behaviour remained broadly the same over the primary school period and into the secondary school. Such long-term persistence of deviant behavior could possibly be explained in terms of the early learning of maladjusted responses by the child and their maintenance through unwitting reinforcement provided by teachers or peers.

In addition to examining the trend in the ratings described above it is also of interest to look at the adjustment at the late junior school stage of the children who were judged by their teachers to be poorly adjusted during the late infant school stage. These two occasions were chosen for comparison since they represented end points of discrete stages in the children's school careers. Of the 15 children with poor adjustment ratings (3 or 4) in their third infant school year, eight were judged to be well adjusted (ratings of 1 or 2) in their fourth junior school year, whilst the remaining seven children remained poorly adjusted, according to their teachers. (The latter included the group of persistently poorly adjusted children described earlier in this section.) Thus, of the group of children who might have been regarded as "at risk" at the late infant school stage because of poor adjustment, just under half remained poorly adjusted approximately 4 years later. At the same time, 14 children who were rated as well adjusted by their infant school teachers (third year) received poor adjustment ratings at the late junior school stage so that the predictive value of the early ratings is clearly limited. These findings are in line with those resulting from Chazan and Jackson's (1974) investigation of the persistence and development of poor adjustment during the infant school years of the larger sample from which the children in the present study were drawn.

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*Includes one child with a poor adjustment score on one of the two infant school ratings.

†It should be noted that the prevalence of rated poor adjustment was roughly three times higher among the children from disadvantaged home backgrounds (between 22 and 34% on the four occasions) than among the children from more advantaged backgrounds (between 0 and 11% on the four occasions).

DISCUSSION AND CONCLUSIONS

The results obtained with the Schaefer Rating Scale on the four occasions are fairly consistent in showing that at selected stages in the children's school careers up to nearly a quarter of the children in the study showed signs of emotional disturbance in school, although there was appreciable variation from one occasion to the next in terms of which particular children were so rated. Because of the small and selective nature of the sub-sample (the children came from "Deprived Area" schools), the imbalance in the numbers of boys and girls, and a probable reluctance on the part of at least some teachers to rate children as disturbed, this figure should not be regarded as representative of the proportion of children showing signs of behavioural disturbance in schools. Moreover, the rating scale used is rather a crude device (it actually forms part of a comprehensive behavioural checklist) and is likely to be affected by a variety of distorting influences known to affect global ratings of this type (Vernon, 1963). Despite this there was a statistically highly significant measure of agreement between the ratings received by each child on successive occasions, and also between the children's Schaefer ratings at the junior school stage and their scores on the Rutter scale completed by their teachers at the same time. Furthermore, it was possible to identify from the data several distinct sub-groups of children showing a meaningful pattern of ratings over the four occasions. Of these, the children of greatest concern were those who were consistently rated as poorly adjusted throughout the 6 year period. As Chazan and Jackson (1974) state in respect of the children in their study who presented behaviour problems throughout the infant school period, such children should be regarded as "at risk" and in need of support as early as possible. It was not possible to find a clear cause of the maladjustment of these particular children but the fact that they all came from homes judged to be culturally disadvantaged supports the findings showing a higher prevalence of school adjustment problems among lower class children (Davie *et al.*, 1972; National Children's Bureau, 1972; Chazan and Jackson, 1974; Cox and Jones, 1977). The persistence over the 6 year period of the same type of deviant behaviour pattern in some of the children was also a noteworthy feature, suggesting that in such cases teachers may need more guidance in handling such problems. In this connection it is of interest that in two of these cases the child had been referred to helping agencies (School Medical or School Psychological Services) fairly early during the infant school period, but the research project records do not show what help, if any, was given.

The very high incidence of severe reading backwardness in this little group of children, again, is in line with research showing a strong association between maladjustment and low school attainment (Chazan, 1969). On the question of whether the maladjustment was a consequence or a cause of the children's low attainment it is suggestive that these children were rated as poorly adjusted as early as the second term of their second infant school year. In their case at least it would seem that poor school adjustment may well have been a contributing factor in their subsequent reading backwardness.

The present study underlines the need for the early identification of children showing school adjustment problems and the careful monitoring of these children's development so that those whose adjustment difficulties persist should receive any necessary medical and educational treatment, coupled, where appropriate, with support for their families. It also suggests that even a crude rating scale of the type used in the present study may have a useful part to play in the process of assessing children's school adjustment, although it should be supplemented whenever possible by more objective measures of the child's behaviour both at school and at home, and also, perhaps, free comments by the raters.

SUMMARY

A group of 97 children from schools serving "deprived" catchment areas were studied over a 6 year period up to age 12. Teachers' ratings of their overall school adjustment, obtained on four separate occasions, were compared. Over the four occasions between 14 and 23% of the children were judged to be poorly adjusted although there was appreciable variation from one occasion to the next in terms of which children were so rated. Several sub-groups of children were identified according to their pattern of ratings over this period; in particular, a group of six children showing persistent behaviour problems. The need for the early identification of children showing poor school adjustment is stressed.

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ECHOING IN AUTISTIC CHILDREN: A CHRONOMETRIC STUDY OF SEMANTIC PROCESSING

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THE FIRST description of early infantile autism (Kanner, 1943) noted several characteristic features prominent among which is delayed and non-communicative speech that includes echoing. Recently, fundamental differences have been demonstrated between the echoes of autistic and imitations of normally developing children (Shapiro, Roberts and Fish, 1970). Autistic children tend to produce an exact repetition of a part of a model utterance with little of the restructuring by addition of words or modification of form that predominates even in the imitation of normal two, three and four year olds. Hermelin and O'Connor (1970) studied autistic children's echoes and found that they have an intact auditory span, but their decoding and association processes are impaired. They describe an "echo box memory" as characteristic of their performance. Aurnheimer-Frith (1969) matched 16 autistics with 16 normals and showed that autistic children do not take note of structural markers in the model but are as competent as normals in phonological repetition. Bartolucci and Albers (1974) and Bartak and Rutter (1974) similarly reported the inability of autistics to appreciate syntactic markers. Fay and Butler (1968) have explored the echoing of non-psychotic retarded children and discussed its function in social facilitation.

By contrast, Nelson's (1973) studies of normally developing children showed that imitative utterances were prominent only in those children who tended to use nouns as the largest segment of their first 50 words. The second (Expressive) group used more prepositions and verbs and did not imitate as much. These children were not considered to be of different intellectual or maturational levels in other respects. Bloom *et al.* (1974) carried out an extensive longitudinal investigation of four children in naturalistic settings and showed that two children of their sample were imitators. They reported that those children who imitated showed similar grammatical forms in their non-imitative corpus as in their imitations suggesting cognitive readiness was necessary for both original and imitative utterances. Bloom *et al.* postulated that imitation was not simple mimicry but progressive, i.e. children who develop normally imitate the grammatical phrases they are ready to produce spontaneously.

The present paper explores the idea that echoing in autistics differs from normal imitation and represents a different species of production. It is proposed that autistic echoing is based on phonetic registration of the model with little or infrequent decomposition into underlying semantic components and that it functions

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as a strategy for social facilitation (Shapiro, 1977). The child seems to register the need to vocalize in order to make his interlocutor cease his pressing verbalizations. The echo suffices to close the interaction temporarily in the face of the child's inability to answer appropriately. We tested the stated hypothesis and more generally explored the autistic child's comprehension by comparing the differences in speed of response between echoic and non-echoic responses. Moreover, if echoic responses require less processing, then we expect that the spontaneous utterances which require semantic processing would be additionally constrained in utterance length. Therefore, the corollary hypothesis was tested that the mean length of utterances (MLU) of echoes should be greater than for non-echoes.

PROCEDURE

The autistic children were studied in a semi-naturalistic setting because they do not readily comply with formal testing. An examiner stimulated each child's productive speech by asking simple questions about a picture book, and other play material. The materials used and level of queries were similar from subject to subject. The child's utterances were rated from a written transcript according to a two-dimensional scale of morphological complexity and communicativeness (Shapiro and Fish, 1969).

Five in-patients at the Bellevue Psychiatric Nursery diagnosed as autistic by two child psychiatrists, using Kanner's criteria, were selected. A minimum of 10% echoic utterances was the only requirement for inclusion. The five children ranged in age from 3 years 10 months to 6 years 8 months (mean age 5 years 2 months) at the time the first sample was obtained. Two 10-min language samples were obtained from each child and audiotaped. The second sample was obtained 2–9 months after the first as a crude reliability index and as a means of assessing any effect of treatment, maturation or learning on their imitations.

In addition, one 10-min sample was obtained from each of two normal children, age 2 years 6 months and 3 years 11 months, who had greater than 10% imitative utterances. Because of difficulties in finding normals who have as high a percentage of imitative responses which are roughly congruent to qualify as echoes, we offer a smaller sample than our experimental group. However, the control group merely provides a contrast to our autistic group as an approximation to Bloom's observations about imitation in normals. The contrast between echoes and non-echoes of autistic children is the focus of this study.

Each audiotape was played on a Tapesonic deck, the signal from which caused a pen on a polygraph to produce a peak corresponding to each sound of recorded speech on a paper record that advanced at 50 mm/sec. Response latencies were obtained by measuring the interval between the last peak of the examiner's speech and the first peak of child's utterance on the polygraph record. The response latencies of echoic and non-echoic utterances were then compared.

RESULTS

The results, in general, provide rather strong evidence for the present hypothesis regarding echoing. The mean latencies of the autistic children (Table 1) were computed by averaging separately all the echoic and non-echoic latencies in each sample.* These means were used for computing the four overall means by collapsing across the five subjects and were submitted to an analysis of variance. Echoic responses were an average of 43 hundredths of a second faster than non-echoes, as predicted [$F(1,4) = 34{\cdot}21$, $P < 0{\cdot}01$]. In fact, for each of the five children in both the first and second samples, echoes were produced more rapidly than non-echoes. The total mean of the first sample, obtained by averaging across echoes and non-echoes, does not differ from the second, and also there is no significant first/second sample × echo/non-echo interaction. Thus, no net effect of treatment or maturation can be claimed on this measure.

TABLE 1. AUTISTIC CHILDREN'S MEAN LATENCIES* FOR ECHOES AND NON-ECHOES (NE) AND OVERALL MEAN LENGTH OF UTTERANCES (MLUs)

Subject	First sample		Second sample	
	E	NE	E	NE
D.T.	42 (12–126)†	74 (16–324)†	35 (10– 76) †	54 (10–183)†
J.F.	69 (29–134)	92 (15–274)	85 (9–216)	112 (25–294)
S.H.	54 (24– 98)	107 (20–259)	66 (22–153)	127 (36–241)
A.K.	88 (30–210)	151 (16–303)	70 (22–126)	103 (40–208)
R.I.	66 (20–161)	131 (16–335)	64 (14–238)	114 (20–292)
Mean	64	111	64	102
MLU	1·89	1·73	2·56	2·07

*In hundredths of a second.

†Range of response.

The two normal children gave quite different results (Table 2). Unlike the autistic's rigid production of structurally congruent fragments of a model utterance, these children restructure the model or added new words in their imitations. We found no significant difference in the mean latencies of imitation and spontaneous speech of either child [for A.M. $t(94) = 0{\cdot}43$ns, for P.C. $t(94) = 0{\cdot}85$, ns].

TABLE 2. NORMAL CHILDREN'S MEAN LATENCIES* FOR IMITATIONS (I) AND NON-IMITATIONS (NI) AND MEAN LENGTH OF UTTERANCE (MLU)

	I	NI	MLU
A.M.	97	91	3·85
P.C.	147	127	3·07

*In hundredths of a second.

The autistic children's echoic responses are faster than non-echoic by an average of 43 hundredths of a second, while in normal children imitations differ from non-imitative utterances by only 13 hundredths and in the opposite direction, i.e. imitative latencies were greater than non-imitative. The average difference between the autistic echoic and non-echoic latencies is significantly greater than the average differences of imitative and non-imitative latencies in normals [$t\ (5) = 43{\cdot}6$, $P < 0{\cdot}01$].

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*Range of echoic responses in each sample was 11–97 (mean 41); non-echoes ranged from 23–79 (mean 58). Latencies over 350 hundredths of a second were excluded. This value was chosen arbitrarily as a limit for processing and production related to the examiner's utterance. Latencies greater than this limit were likely to include processing of irrelevant stimuli. Only four echoes were excluded and no more than 5% of non-echoes in each sample were eliminated. The net effect was to make the analysis a more stringent test for differences between echoes and non-echoes.

We computed three correlation coefficients to test whether the difference between the means for echoes and non-echoes of autistics could be attributed to the amount of verbalization: the number of echoes, number of non-echoes, and total utterances were each compared to the different scores obtained by subtracting the echo latencies from non-echo latencies. None of these correlation coefficients attained significance.

The mean latencies for echoes were also compared to a subset of non-echoes, (communicative contextually relevant utterances), which provides a more valid index of processing of the examiner's speech than a measure that lumps together all non-echoic functional categories. Echoes were an average of 50 hundredths of a second faster than communicative responses $F\ (1{\cdot}4) = 28{\cdot}78$, $P < 0{\cdot}01$ and again there was no evidence of change between examinations.

Our prediction of an expanded utterance length of echoes finds some support from an examination of the overall MLUs of the autistic children. These were calculated for both samples by collapsing the average MLUs of echoes and non-echoes of the five subjects. In the first set of samples the overall MLU is 1·89 for echoes and 1·73 for non-echoes [$t\ (4) = 1{\cdot}22$, ns]; in the second set, the echo MLU is 2·56 and non-echo MLU is 2·07 [$t\ (4) = 2{\cdot}35$, $P < 0{\cdot}05$, one-tailed test].

CONCLUSION AND DISCUSSION

Brown and Bellugi (1964) found no difference in the MLU of normal children's imitation and spontaneous speech in the range of two to four morphemes. They argued that a constraint in planning or programming acts on both imitations and original utterances. Our results suggest that such a constraint may not be present in the autistic child's imitations. The MLU of the two normal children we tested did not show this constraint on imitation but it cannot reasonably be compared to the other findings since our definition of imitation, unlike Brown and Bellugi's, results in a strong bias for the inclusion of utterances over two words.

Our findings suggest that when autistic subjects echo they are utilizing a second strategy that results in a briefer response latency. This effect may be the result of restricted processing at the level of comprehension, grammatical coding, or cognitive reorganization.

It is, of course, not possible to distinguish between comprehension and production deficits merely by comparing the response latencies of two categories of speech. Rather, the context in which echoing occurs, the eliciting stimulus conditions and its communicative function provide a better basis for drawing a distinction. Our observations show that the autistic child is most likely to echo when the structural or semantic complexity of the examiner's utterance is beyond his comprehension (Shapiro, in press). Moreover, when he echoes a simple request he infrequently carries out that request. In the rare instance that he appropriately answers a formerly echoed query, it is at some later point. Echoes also often occur in consecutive clusters, suggesting that echoing becomes a sticky set and preferred strategy that the child used even when he might answer appropriately.

A deficit at the production level gains support from the finding that the range of semantic and syntactic forms in autistic children's non-echoic responses are extremely limited when compared to those of normal children, suggesting the functional need for so simple a device as echoing.

The function of echoing as a social facilitation can best be understood in terms of the "speech act" (Searle, 1969), which stresses the dyadic nature of early language learning. Such a model provides a necessary complement to the innatist postulates of prior structuralist studies that account for acquisition of language by focusing only on grammar. In contrast to these latter models the speech act permits us to imagine the intent of the utterance without ignoring its function as a communication. We still segregate the utterances by their form (echoes and non-echoes as well as complex or simple grammatically) but then ask how the autistic child uses these forms to relate to another individual verbally. The differences in latency between echoes and non-echoes indicate that s(he) uses at least two strategies. The echoic strategy is of such brief latency as to suggest that central processing is much more limited as compared to non-echoes. Indeed, the greater variance of non-echoes clearly suggests a variety of cognitive intervening variables which would be consonant with "thinking out" a response to correspond with the examiner's request.

But how are we to account for the limitations in processing that give rise to the need to echo? Most investigators of language development place central importance on the child's integration of specific components of cognitive and perceptual development as a prior condition for the child's emerging grammar. The role of prior cognitive–perceptual organization in language development has been made explicit in only a few examples such as the acquisition of case grammar forms (Bruner, 1974) or spatial and temporal terms (Clark, 1973). These remain most promising approaches to an understanding of the deviant speech and language of the autistic child. Similarly, psycholinguistic techniques continue to be powerful tools for studying autism and complement behavioral studies and biochemical studies that continue to be inconclusive.

SUMMARY

The time required to produce a verbal response has been used extensively as an index of the complexity of the mental operations that underlie the comprehension and production of language. An analysis of the discourse of five autistic children with an adult demonstrates that echoic speech depends on simpler, more limited decoding of adult utterances than the child's creative original speech. By contrast, two normal children show no significant difference in reaction times between imitative and spontaneous productions using the same measure. This finding lends support to the notion that autistic children rely on two strategies for their language production made necessary by a cognitive deficit.

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A DESCRIPTION OF ASPECTS OF MOTHER–INFANT VOCAL INTERACTION

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INTRODUCTION

IN CONTRAST to earlier developmental research, recent studies have been concerned to understand the interactive nature of the mother–infant relationship (e.g. Lewis and Rosenblum, 1974; Schaffer, 1974). As Hinde (1976) has argued, such understanding can only be achieved by way of detailed descriptive studies, which are gradually beginning to appear in the literature (e.g. Blurton Jones, 1972; Collis and Schaffer, 1975; Lytton, 1976). Since language is the primary means of communication in humans, the general aim of this paper is to provide information about the vocal interaction of mothers and their children.

Ryan (1974) pointed out that accounts of language development have usually omitted to describe the interaction between the child and his parents. There has been a general failure to consider the interpersonal context of language, such that "... the child's speech has been treated as an isolated phenomenon" (Ryan, 1974, p. 199). Many potentially relevant studies have either been too general (e.g. Beckwith, 1971) or experimental rather than descriptive (e.g. Wahler, 1969). Nevertheless, there has been some attempt to describe the vocabulary and syntax of mothers' speech (Snow, 1972; Phillips, 1973). Such studies have shown that mother to child speech is significantly different from adult to adult speech in that it tends to be simpler and more redundant. Nevertheless, this information is only of indirect value in understanding the process of vocal interaction (Lewis and Lee-Painter, 1974).

Although details concerning the formal aspects of adult–adult verbal interaction have been available for some time (Jaffe and Feldstein, 1970), very little work has been published which describes these aspects of mother–infant vocal interaction at different ages. Although Bateson (1975) described some aspects of the temporal organization of episodes of vocal turn-taking in mothers and 3-month old children, Stern *et al.* (1975) found that the predominant tendency at this age was for the mother and child to vocalize in unison. However, Schaffer *et al.* (1977) found that by the age of 12–27 months turn-taking was the predominant mode of communication in a middle-class sample. Though there were examples of simultaneous vocalizations at this age, they were relatively rare. They also found that although the mothers tended to spend more time talking than did their children, nevertheless they seemed to match their vocal output to the child's (a significant positive correlation was found for the mothers' and children's vocalizing times).

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Schaffer *et al.* provided more detailed information about the relationships between utterances, by carefully timing speaker-switch pauses. Such pauses occur between the offset of one partner's vocalization and the onset of the others. Two types of pause were studied, (a) where a mother's vocalization follows a child's vocalization (a child–mother pause), and (b) where an utterance of the mother is followed by a child's utterance (a mother–child pause). Schaffer *et al.*, like Jaffe and Feldstein (1970), found that these pauses were characteristically short, usually in the region of a fraction of a second. However, there was a significant difference between the duration of mother–child pauses and child–mother pauses in that mothers tended to reply more quickly than their children. This result directly supported the findings of Stella (1974) who described the distributions of speaker-switch pauses for a small group of middle-class mothers and their 21-month old children.

The purpose of the present paper is to describe a study which confirms the findings of Schaffer *et al.* (1977) and Stella (1974), by investigating the vocal interaction of a group of working-class mothers and children who are on average younger than those previously studied. Perhaps more important, however, is that an attempt is made to extend the previous results by using a novel method of analysis in order to determine whether children's utterances are sequentially dependent upon maternal utterances. The method involves the comparison of distributions of speaker-switch pauses with distributions generated randomly.

METHOD

Subjects

The subjects included in the study were 10 British working-class women and their children, randomly selected from mothers who attended an Infant Welfare Clinic in the London Borough of Tower Hamlets. The mothers were all married and none were employed. Their average age was 25·1 years. Six of the women had children other than the one included in the study. The children (one male and nine female) were all healthy and had an average age of 11·4 months (range from 6 to 16·8 months). They were all preverbal in that only five of 1584 recorded utterances were intelligible.

Observation room

The observation room was a purpose-built nursery about 8 m × 5 m. It was light and well furnished with an armchair for the mother and a small table and chairs for the child. The walls were decorated with children's drawings and paintings. A variety of toys were provided for the child. An adjoining room contained the recording equipment which consisted of a Sony videotape recorder, camera and monitor as well as a radio microphone receiver which fed directly into the recorder. The most effective way of recording the utterances of the mother and child was to pin the small radio microphone to the mother's lapel. The transmitter was placed in a pouch which was carried on a belt around the mother's waist. A large window between the nursery and recording room provided an unrestricted view of the behaviour of the mother and child. Only the lens of the camera was visible from the nursery, since heavy dark curtains were drawn across the window inside the recording room.

Procedure

The subjects were taken into the observation room by the experimenter who remained until they were settled. All the mothers seemed to relax easily which was probably due to the fact that good relationships had been established during previous interviews. All the children adjusted immediately to the new surroundings and according to the mothers' reports acted as they would at home. The mothers were simply instructed to stay with the child and to do whatever they wished.

Although the mothers were informed that both they and the child would be filmed, to help prevent anxiety in the mother, emphasis was given to recording the behaviour of the child. It was felt therefore that the mother's behaviour was not changed in any important way by being in the observation room rather than at home. After chatting for some time, the experimenter left the mother and child together in the nursery and began the recording which lasted for about 20 min.

Analysis of the recordings

Each videotape was analysed by means of two channels of a Rustrak event recorder. One observer operated one channel whenever the child vocalized, whilst a second observer operated the other channel whenever the mother made an utterance. An utterance was defined as any discrete vocalization (whether a noise, word, phrase or sentence) which was separated by pauses of 1 sec or more from any other vocalization made by the same individual. The only sounds excluded were crying and exertion noises.

From the event-recordings various measures were derived, which for the purposes of the present study included the frequencies of mother and child utterances, the frequency of overlapping utterances (i.e. when a mother and child were vocalizing at the same time) and the duration of speaker-switch pauses (both mother–child pauses and child–mother pauses).

The inter-observer reliability of these measures was sufficiently high. The correlation between observers for frequencies of both mother and child utterances was 0·99. To express this in another way, there was 94·51% agreement between two observers with respect to the presence or absence of an utterance. Disagreements were easily resolved and seemed to occur only when an utterance was extremely quiet. The reliability of the duration of intervals between utterances was demonstrated by their being 80% agreement between two observers. For these purposes an agreement was defined as a discrepancy of less than one-tenth of a second. The disagreements that occurred were in the order of a quarter of a second, and none were greater than half a second. In fact only 3·5% of the intervals showed a discrepancy as large as 0·5 sec. More important, however, was that there was no systematic discrepancy, in the sense that one observer did not produce consistently longer or shorter estimates than the other. Overall, therefore, it was felt that the results would not be crucially distorted by observer differences.

In an attempt to determine whether mother and child utterances were dependent upon utterances of the partner, a further analysis was performed. This involved the generation of random distributions of mother–child and child–mother speaker-switch pauses. The distributions were formed by randomly selecting two of the 10 event-recording tapes so that the utterance of one mother could be compared with the utterances of an unrelated child. In other words, the record of a child on one tape was placed in juxtaposition to the record of a mother on the other tape and both were securely held in position. Consequently, the two records were lined up in such a way that the intervals between mother and child utterances could be measured as though they had been recorded whilst interacting together instead of interacting with other partners. This procedure was repeated, selecting two tapes from the total pool each time, so that 10 sets of data could be used to form random distributions of mother–child and child–mother speak-switch pauses. It was assumed, therefore, that these distributions reflected a situation of no temporal relationship between mother and child utterances.

RESULTS

1. *Utterance frequency*

As might be expected, there was considerable variation in the frequency of utterances of both mothers and children. The mean for the mothers was 10·29 utterances per minute (ut/min) with a range from 1·9 to 22·2. ut/min. The mean for the children was 8·04 ut/min, with a range from 2·8 to 20·7 ut/min. Although there was a difference between the means of the mothers and children, it was not statistically significant.

There was a slight but insignificant tendency ($\rho = 0{\cdot}48$) for the older children to vocalize more frequently, as found by Schaffer *et al.* (1977). However, no relationship was found between the frequency of maternal utterances and the frequency of child utterances (ρ = $-0{\cdot}09$).

2. *Speaker-switch pauses*

(a) *Child–mother pauses.* The duration of every child–mother speaker-switch pause, regardless of length, was measured as described in the Method section. Although there was considerable variation across mothers with respect to the number of child–mother pauses observed, the individual distributions of pauses were very similar. It was found that if a maternal utterance followed a child's utterance then there was a definite tendency for the pause to be extremely short; in fact 40 per cent of the speaker-switch pauses were less than 0·25 sec. As can be seen in Fig. 1, the vast majority of the pauses were less than 1 sec. It should be noted that there is an extremely close match between the present distribution and that described by Stella (1974).

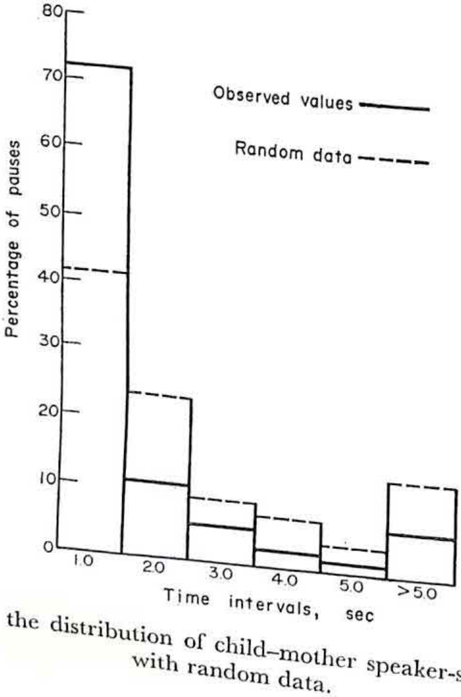

FIG. 1. Histogram showing the distribution of child–mother speaker-switch pauses in comparison with random data.

An analysis of variance was performed to compare the distribution of child–mother pauses with a random distribution, the formation of which is described in the Method section. In this, as in all subsequent analyses, a square-root transformation was performed on the data, since they were not normally distributed. A highly significant difference was found between the two distributions [$F_{(df5,90)} = 5{\cdot}4$; $P < 0{\cdot}01$] in that the real pauses tended to be much shorter than would be expected by chance.

(b) *Mother–child pauses.* Every example of a mother–child speaker-switch pause was measured regardless of its duration. Once again the number of such pauses varied considerably from child to child. The overall distribution is shown in Fig. 2.

Again, a reasonably clear replication of Stella's results was found, since an analysis of variance showed no significant difference between the two distributions.

Although the overall shapes of the distributions of mother–child pauses (Fig. 2) and child–mother pauses (Fig. 1) were similar in appearance, an analysis of variance indicated that the two distributions were significantly different [$F_{(df5,90)} = 2{\cdot}69$; $P < 0{\cdot}05$]. Thus, the children did not time their utterances in the same way as their mothers, in that the mother–child speaker-switch pauses tended to be longer and more variable.

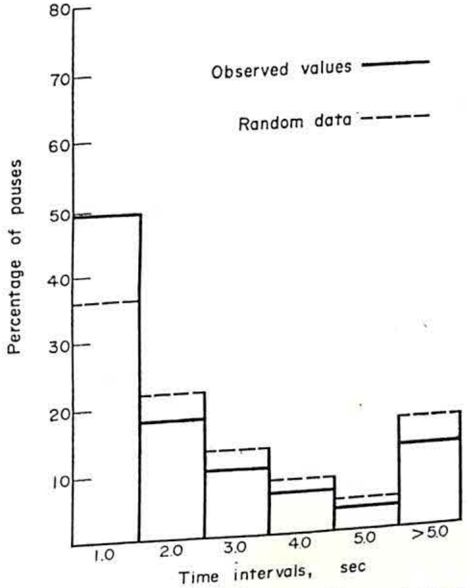

FIG. 2. Histogram showing the distribution of mother–child speaker-switch pauses in comparison with random data.

Having found differences between mother–child and child–mother pauses, an effort was made to determine whether a child's utterances were dependent upon the preceding maternal utterances. This was done by making a comparison between the distribution of mother–child pauses and a random distribution, which is illustrated in Fig. 2. Since the analysis of variance showed no significant difference between the two distributions, the implication was, therefore, that the child's utterances were randomly timed and not dependent upon the preceding maternal utterance.

A final analysis of variance was performed to compare the mother–child pauses of the five children younger than 12 months with the five who were 12 months and over. No significant differences were found.

3. *Overlapping utterances*

In this study, there were very few episodes of overlapping utterances, in which one partner interrupted an ongoing vocalization of the other. Only 20 (1%) maternal utterances from a total of 1991 occurred whilst a child was vocalizing. As for the children, only 5 (0·32%) utterances from a total of 1584 interrupted a maternal utterance. All the recorded overlaps were what Schaffer *et al.* (1977) called turn-taking failures, where there was a definite interruption rather than instances of laughing together, chorusing, etc. All 25 instances were accounted for by three mother–infant pairs; no overlaps were detected, therefore, in the other seven pairs. The significance of these results was strikingly demonstrated when they were compared with the randomly generated data, in which 11·4% of the child utterances overlapped maternal speech.

DISCUSSION

The present study, by describing various aspects of mother–child vocal interaction generally confirmed the findings of Schaffer *et al.* (1977) and Stella (1974). The turn-taking nature of the interaction was clearly demonstrated, by the infrequent occurrence of overlapping utterances and by the temporal relationships between mother and child vocalizations. The temporal organization of utterances was demonstrated by describing the distributions of both mother–child and child–mother speaker-switch pauses. Neither of these distributions was found to be significantly different from the patterns described by Stella (1974). These results, therefore, extend previous findings, since the subjects used in the study were working-class rather than middle-class, and the children were on average very much younger than those studied by Stella and Schaffer *et al.* It is clear that the coactional communication mode, described by Stern *et al.* (1975) as the predominant mode, has been largely replaced by the alternating mode by the second half of the first year of life.

The finding that child–mother pauses were significantly different from mother–child pauses was confirmed in that the mothers' replies tended to be quicker and less variable. Since the distribution of child–mother pauses was significantly different from a random distribution and since it was usually the case that the mother replied to the child within 1 sec, it would seem reasonable to conclude that the mothers' utterances tended to be sequentially dependent upon the child's utterances. Such a conclusion is to some extent supported by the fact that mothers do not seem to modify this aspect of behaviour when talking to a child. That is to say that although mothers talk more simply and redundantly to their children (Snow, 1972; Phillips, 1973), nevertheless, the timing of their replies seems to be the same as in adult–adult interaction (Jaffe and Feldstein, 1970).

It would appear, therefore, as Schaffer *et al.* suggested, that the mother played a very large part in regulating the interaction by not interrupting and by timing her utterances closely to the child's. In support of this conclusion, Schaffer *et al.* also found that although the mothers in nearly all cases spoke more than their children, their output was closely matched to the output of the child. In the present study, however, this finding was not supported, though the measures used involved frequency of utterances rather than total vocalizing time.

The extent to which the child contributed to the regulation of the interaction was a question left open by Schaffer *et al.* From the present study, it can be concluded that children (even as young as 6 months) contributed by not interrupting maternal utterances, though in principle they were free to vocalize at any time. To this extent, therefore, they matched their utterances to their mothers'. However, since the distribution of mother–child speaker-switch pauses was not significantly different from a random pattern, there was no evidence to suggest that the child's utterances were in general sequentially dependent upon maternal utterances. Consequently, in this respect, the data suggested that the children did not actively contribute to the temporal organization of the interaction. It would be valuable to know at what age children do begin to approximate an adult pattern of timing, since research to date indicates that the pattern does not change between the ages of 6 and 27 months. It is clear, however, that an adult pattern is not instituted when the child begins to use words.

Overall, therefore, although only limited aspects of the mother–infant interaction were considered, the present study would seem to suggest that it is the mother who takes the more active part in the regulation of vocal interaction by following the lead of the child and pacing her own behaviour accordingly. Such a conclusion clearly supports the impressions of previous authors (Schaffer, 1974; Schaffer *et al.*, 1977). Nevertheless, it would appear that the child contributes to the smoothness of the interaction and to some extent takes account of the mother's behaviour by not interrupting ongoing utterances.

SUMMARY

This paper was concerned to describe aspects of the vocal interaction of working-class mothers and their young children (average age 11·4 months). Information was provided about the frequency of vocalizations, the occurrence of simultaneous utterances and the distributions of speaker-switch pauses. The results confirmed the finding of previous studies that the alternating mode of communication was predominant. On the basis of a new method of analysis it was suggested that the mothers played the more active part in the regulation of the interaction by pacing their utterances to those of the child, although the child contributed by rarely interrupting ongoing utterances.

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ABNORMAL BEHAVIOUR PATTERNS DEVELOPING IN CHIMPANZEE INFANTS DURING NURSERY CARE—A NOTE

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CHIMPANZEES reared in total social isolation developed abnormal behaviour patterns such as stereotyped movements, head-banging and digit-sucking (Davenport and Menzel, 1963). Isolation experiments with rhesus monkeys have shown similar results (see Mitchell, 1970, for a review). According to Davenport *et al.* (1966), the development of these abnormalities depends on the infant's age; no stereotyped behaviour patterns were seen in wild-born chimpanzees which were socially isolated for 6 months, beginning at the age of 18 months.

In the course of our chimpanzee breeding program, abnormal behaviour also developed under circumstances that are socially much better than total isolation. Nine chimpanzee infants, initially living with their mothers for different periods of time, all developed abnormalities when placed under human care in a nursery. This note describes the development of abnormalities following separation from the mother. Particular attention will be paid to the aetiological relationships between an abnormal pattern and its normal counterpart. Since the abnormalities observed are similar to those in human children, the results may cast light upon the origin of comparable abnormal human behaviour patterns.

METHODS

The infants were separated from their mother because of illness of either mother or infant, because of insufficient nursing by the mother or when they reached the age of 7 months. The ages at separation are given in Table 1. Following separation, the babies were housed in a transparent incubator. Older apes spent most of their time with peers. During the daytime, the group used an entire room which was provided with objects for climbing; nights were spent together in a cage.

One nurse (the second author) cared for the young animals throughout the study period. She was assisted by two other nurses. Ape–nurse communication was reciprocal but restricted in time.

Nursery data are based on diary notes made by the authors. For 14 single caged mother–infant pairs (including the last five in Table 1), data were collected for at least 10 hr per pair. These data are qualitatively compared with those for babies in nursery care.

The differences between maternal and nursery care are as follows: (1) The chimpanzee mothers were always close by. In the nursery, a human adult was present during only a part of the day and absent during the night. (2) The chimpanzee mother usually picked up her baby immediately upon its vocalizations. In the nursery, however, a nurse often had no time to allow body contact with an infant. (3) The chimpanzee mothers rarely prevented breast feeding. In the nursery, the infants

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often had to wait alone while another baby was fed, especially in the early morning. (4) Inevitably, the nature of stimulation of chimpanzee mothers and nurses was different in many respects.

TABLE 1. PRESENCE (+) OF ABNORMAL BEHAVIOUR PATTERNS IN YOUNG CHIMPANZEES IN THE NURSERY

Ape	Duration of maternal care (days)	Nursery period considered (days	Self-clasping	Peer-clasping	Cloth-clasping	Digit-sucking	Body-rocking
Monica	0	52	+	(1)	+	++	(2)
Ben	0	63	+	(1)	+	++	(2)
Esther	0	105	+	−	+	++	(2)
Dirk	0	106	+	−	+	++	+
Adriana	36	236	−	+	++	−	++
Hans	117	100	−	(3)	++	+	++
Ronald	151	191	+	+++	+	−	+
Coen	224	137	−	+	−	−	−
Natalie	224	83	+	+	+	−	+

(1) No peers present.
(2) Too young to be able to sit upright or walk.
(3) Peers refused him.

RESULTS

All infants developed a few abnormalities, but no abnormal pattern was shown by all of them (see Table 1). In contrast, no abnormal pattern was shown during maternal care, except that Natalie developed body-rocking even before separation. The abnormalities can be categorized into three classes: (1) redirected clasping; (2) non-nutritive sucking; and (3) repetitive body movements.

Redirected clasping

All infants developed one or more types of redirected clasping (Table 1). The opportunity to hold on an adult in the nursery was much less than when living with their chimpanzee mother. It is likely that this lack of opportunity led to the development of redirected clasping. When given the choice, the nurse was usually preferred over a peer. A peer was usually preferred over a cloth. Self-clasping only occurred when a cloth, peer and nurse were out of reach.

Digit-sucking

In chimpanzee infants, hand mouthing with open lips and without sucking is very common. Digit-sucking was absent in the mother-cared infants but developed as common behaviour in the four babies that had lived in the nursery from their day of birth. It did not develop in infants that had been with their mother for at least a month. However, digit-sucking was occasionally shown by Hans under stressful conditions.

During the first 69 days after birth, the chimpanzee mothers nursed between 6 and 11% of the time, depending on the pair. In the nursery, bottle feeding took up no more than 3% of the time. Of course, it is not certain whether this lack of nutritive sucking is the cause of digit-sucking, since the differences between maternal and nursery care are multiple. This point will be discussed below.

Repetitive movements

Stereotyped body movements were observed in all-but-one of the older infants (Table 1). It was not shown by babies that could not yet sit. The age of onset was 4–5 months, which is the age that agile creeping with the body lifted from the floor is fully developed. In human infants, that develop slower, the modal age of the onset of body-rocking is 6 months (Kravitz *et al.*, 1960; Provence and Lipton, 1962; Spitz and Wolf, 1949; Brody, 1960).

The circumstances under which repetitive body movements initially developed were carefully observed. In all but the last case, the infant demonstrated, often by looking and body orientation, that it would walk: (1) towards a peer from which it was separated by a transparent partition (Dirk); (2) towards a nurse for feeding and being carried when remaining in the large night cage (Adriana, Ronald); (3) from a room with offending, older peers when free in that room or in a crib (Hans); (4) towards the home cage with peers by means of crossing a large, unfamiliar and fear-inducing square (a 2-year-old chimpanzee); and (5) from a very small cage (three 2-year-old chimpanzees caged together). In only one chimpanzee (case 6), was body swaying already shown when she was with her mother (infant Natalie). She usually did so while clasping the mother with one hand.

All results are based on several repetitions of the circumstances. In cases 1–5, locomotion would have led to the described goal if the barrier had been absent. Therefore, it is hypothesized that the repetitive body movements replaced locomotion. This hypothesis is supported by the observations that, in all of these cases, rocking immediately disappeared if a caretaker allowed the goal to be reached. Another indication that repetitive body movements replace locomotion is the morphological resemblance between the two classes of behaviour. This argument is stronger for front–back rocking in a creeping position (Dirk, Hans, and case 4) and turning around on the spot in the creeping position (Ronald) than for swaying sidewards (all other cases).

In case 6, body swaying cannot be a replacement for locomotion towards the mother, since it held to her in the meanwhile. During manual interactions, a chimpanzee mother often makes her infant's whole body move. This was rarely done by this particular mother. In this case, it seems that the infant replaced being moved by swaying its own body.

CONCLUSIONS

Young chimpanzees cared for by human nurses all developed a few abnormal behaviour patterns not or rarely shown by chimpanzees housed with their mother. A number of deficiencies such as too short interaction time and sleeping alone seems to be responsible. Three different processes are found in the change from normal to abnormal behaviour.

(1) *Redirection*

The restricted possibility of clasping a nurse led to a redirection of clasping. The order of preference was: peer, cloth, own body. In rhesus monkeys reared on surrogate mothers, the preferential order was: wire surrogate, cloth surrogate and warm cloth surrogate (Harlow *et al.*, 1966, 1973). Apparently, ape and monkey infants search for stimuli that resemble the natural mother as closely as possible (Berkson, 1967), which supports the interpretation that we deal with redirected mother-clasping. In human infants, cloth-clasping commonly develops when they sleep in a crib, but it is infrequent if infants sleep at their mother's side (Hong and Townes, 1976). This suggests that redirected clasping may arise in connection with sleep.

(2) *Altered shape*

If locomotion towards caretaker or peer or from offending infants, an unknown square or a small cage was hampered, stereotyped locomotion-like movements on the spot were shown instead. In humans, a few case histories suggest the same aetiology (Lourie, 1949; FitzHerbert, 1950; Brody, 1960). Brody stated that rocking represents "the effort to re-establish body contact with the mother".

In one chimpanzee, body-rocking developed while with its mother. Plooij (in press) described the same for a wild chimpanzee infant. In this minority of cases, lack of being moved by the mother was the probable cause.

(3) *Connection with different behaviour*

Digit-sucking developed in all nursery babies but was almost absent if at least one month of maternal care was experienced. It seems plausible to suppose that digit-sucking resulted from the observed lack of nutritive sucking. However, the multiple differences between both circumstances precludes a decision about the aetiology. In humans, Ozturk and Ozturk (1977) found that children left alone to fall asleep after feeding developed digit-sucking, whereas those who experienced the parent's proximity when falling asleep rarely did so. Other potentially relevant factors had little or no impact. They hypothesized that the aetiology of digit-sucking is not so much related to sucking itself, but rather to the manner of falling asleep. Nursery chimpanzees fell asleep alone in an incubator and developed digit-sucking. Mother-cared chimpanzees fell asleep when in body contact with their mother and never showed digit-sucking. Hence, the chimpanzee data are not in disagreement with the results on humans.

We attributed the onset of abnormalities to deficiencies in care by adults. Many human children may overcome these slight disadvantages. However, children differ in their needs for certain stimuli and in their vulnerability to psychiatric disorder. Hence, in attempts to adjust parental care precisely to a particular child, the development of deviant behaviour patterns can be used as a guideline for improvement of the quality of parent–infant interactions.

SUMMARY

During mildly understimulating nursery care, chimpanzee babies and infants developed various abnormal behaviour patterns. These patterns were nearly always lacking during care by a chimpanzee mother. The abnormalities closely resembled those known of human infants. It was attempted to attribute their development to a restricted possibility of showing behaviour directed to the caretaker. Redirected clasping could be attributed to a lack of clinging to an adult. Body-rocking developed when locomotion was hampered. The aetiology of digit-sucking was inconclusive, but compatible with the hypothesis that it arose if babies fell asleep while alone. It

is suggested that these infantile deviant behaviour patterns can be used as indications for an optimal adjustment of parental behaviour to the needs of a particular infant.

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ANNOTATION

FOSTERING THE DISTURBED CHILD

STEPHEN WOLKIND*

IN ITS general sense "to foster" means to encourage, nurture or cherish. The very term suggests that as a child care procedure it might well be the perfect form of management for an emotionally disturbed or deprived child. It is one of the various types of substitute care available for a child who cannot be cared for by or in its own biological family. The child is placed in a family not its own, with the legal parental rights being invested not with that family, but remaining either with the child's family of origin or with the agency placing the child. Under recent legislation in England and Wales (H.M.S.O., 1975) foster parents will be given increased legal recognition and will have the right after 6 months to apply to become the child's legal custodians. They will also be given some protection against the abrupt removal of a child who may have been in their care for many years. In the standard form of foster care, payment is made purely to cover the cost of caring for the placed child. Since it became a recognized and accepted form of child care in the last century it has become an increasingly popular form of placement. At present over 40% of the approximately 100,000 children in local authority care in the United Kingdom and over a half in the United States are placed in this way. In other countries the attitude to fostering varies surprisingly. Extremes in practice are seen in Sweden where 80% of children needing substitute care are fostered and Belgium where it is only 16%. In theory two types of placement are recognized; short term care for a fixed period, for example when a mother is admitted to hospital for childbirth, and long term care when a child might spend many years or even its entire childhood with its foster parents. Unfortunately, in practice this distinction can be difficult to maintain, children requiring substitute care even for apparently the most benign of reasons tend to come from families with devient patterns of relationships (Schaffer and Schaffer, 1968); a supposedly short term placement can drift on for months or even years. However, with the fact that the prime motive for fostering would appear to be a concern for children (and certainly not a financial one) foster care would seem to be ideal both as a method of preventing the harmful effects of bad institutional care as well as a way of providing stability and rehabilitation for an emotionally deprived child who cannot or should not remain in its own family. The first of these aims is certainly met with young children requiring short term care, but difficulties have arisen in attempting to achieve the second.

FOSTERING FAILURE

There are few data available on changes in a child's emotional state during fostering. The main criterion which has been used to examine the success or otherwise

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of an individual scheme or of placements for a particular type of child has been the rate of fostering failure, i.e. the rate of breakdown of placements before the time it was hoped they would end. This is clearly a wide term and can involve moves to terminate initiated by the foster parents, the child or the placing agency. The intense bitterness, despair and guilt so often seen in all parties involved in a "failure" would, however, suggest that it is a reasonable index of the way a scheme is functioning. High rates of fostering failure are found. Parker (1966) found that of intended long term placements made through a British local authority 48% failed within 5 years, 70% of these within the first 2 years. Ambinder (1965) in an American study found that the average 13 year old boy in foster care had had four to five placements. Various factors in the fostering family, such as the presence of natural children and also an older age of the placed child have been shown to relate to failure (Parker, 1966). The two most important factors, however, which predict failure are, unfortunately, characteristic of the child which might suggest that foster care was most required, namely the child having had early institutional care or showing at the time of placement definite emotional disturbance (Trasler, 1960). In his study Trasler estimated that in 86% of failed cases emotional difficulties in the child related directly to the breakdown. Dinnage and Pringle (1967) reviewing the literature to 1966 felt that the bulk of evidence suggested that psychiatric disturbance in the child was a definite contra-indication to a fostering placement.

FOSTERING FAILURE AND PSYCHIATRIC DISORDER— THE MECHANISMS

Dinnage and Pringle (1967) cautioned against the assumption that it was the child's psychiatric disorder which necessarily caused the breakdown, but until recently most workers have concentrated on the child's role. Littner (1960) described how in many cases the child contrived in the foster home to reproduce those same difficulties that led to the original breakdown in its own biological home. This (possibly correct) assumption has, however, often been accompanied by the further assumption that this represented an irreversible pattern of behaviour caused by gross damage to the child in its earliest years. Influential in this sphere has been the contribution to theoretical ideas on emotional deprivation of various early papers describing fostering failure in institutionalized infants. Thus Lowrey (1940) described how 3 and 4 year olds brought up in orphanages were unable to be transferred to foster homes. They would at first appear to settle rapidly in their new placements, but would soon be rejected as being "wild and uncontrollable". They were felt to be too damaged to cope with the demands of normal family life.

More recently the implications of this type of finding have been re-examined in the light both of further evidence on the later effects of early experience and of work in fields closely related to fostering, such as adoption. A growing body of work has suggested that the model of early deprivation producing an irreversible pattern of inability to make one to one relationships and continuing behavioural disturbance is no longer satisfactory. The ongoing circumstances of a child's life are probably of greater importance in explaining the continuance of any difficulties seen (e.g. Clarke and Clarke, 1976). On the practical side the benefits to deprived and disturbed children of providing a prolonged stable relationship with an adult have been seems to have a different significance in the two sexes (see McCandless, 1960). Apparently, early maturing boys have personality advantages whereas this is not the case with girls. Admittedly, the personality measures used in these early studies were rather unsatisfactory but the findings raise the issue that the same variable may have a different meaning for males and females (in this case, perhaps because early maturity is associated with physical prowess which is socially more important among adolescent boys). It is unfair to expect a review to cover everything but it was disappointing not to have more discussions of the significance for psychological development of the different values attached to being male or female in various societies. The authors state that both of them are feminists but there is surprisingly little discussion of sexist tendencies in Western cultures, or of their impact on children's development.

The discussion of possible sex differences in susceptibility to psychological stresses is particularly weak [see Rutter (1970) for a consideration of some of the evidence on this point] and there is only passing mention of sex differences in rates of psychological disorder. The much greater incidence among boys of a variety of developmental problems is noted in connection with the greater vulnerability of the male child to physical anomalies. But it is likely that other explanations are required for the much increased male propensity to show disorders of conduct or delinquent behaviour. Epidemiological studies of the general population (see Rutter *et al.*, 1970) indicate that there are true sex differences in disorder (and not just differences in referral practice), but it remains unclear what the differences are due to.

There is also a neglect of the ways in which age or biological maturity affect sex differences in psychological functioning. For example, it is well established that before puberty emotional disorders occur with approximately the same frequency in boys and girls (see Rutter *et al.*, 1976) and in adulthood both neuroses and depressions are vey much more frequent among women (see Adelstein *et al.*, 1968; Shepherd *et al.*, 1966). Why does the sex ratio change in adolescence? How far does the greater psychological vulnerability in the premenstrual phase (see Dalton, 1969) and in the puerperium (see Kendell *et al.*, 1976) constitute an explanation? What is the significance of the stresses to women of being confined at home looking after preschool children (see Brown *et al.*, 1975)? To what extent are the sex differences in psychological disorder during adult life explicable in terms of the observation that whereas marriage apparently serves a protective function in men, it does not in women (see Rutter, 1970)? What is the importance of the fact that in our society women are much less likely to hold jobs of high status and responsibility (see Fogarty *et al.*, 1971)?

Eleanor Maccoby and Carol Jacklin note regretfully in their introduction that a book about sex differences almost forces an author into being a "trait" psychologist. Perhaps in the next edition of this most important book they will allow themselves to be drawn into some of these less well-defined aspects of psychological functioning. Clearly, it is unjust to complain about what the authors have not attempted, particularly as they have accomplished so very well what they did set out to do. However, it is the very strength of their existing review which makes the reader want them to apply their minds to other psychological issues which are greatly in need of the clear incisive critical appraisal which is the hallmark of this volume. Altogether, this is a splendid book of high scholarship and great interest which deserves, and undoubtedly will receive, a very wide readership.

MICHAEL RUTTER

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CRITICAL NOTICE

The Psychology of Sex Differences. ELEANOR EMMONS MACCOBY and CAROL NAGY JACKLIN. Stanford University Press, Stanford and Oxford University Press, London, 1975, pp. 634. £7.00.

THIS ENCYCLOPAEDIC review of the research evidence on sex differences in psychological functioning supersedes all previous writings on the topic and is essential reading for anyone interested in this important issue. It is also a bargain at £7 with its detailed annotated bibliography as well as a discussion of the literature and a balanced and interesting concluding essay on the aetiology of psychological sex differences and implications for social issues. It is strongly recommended not only for what it has to say about sex differences but also as an excellent model for how any such review ought to be undertaken. Attention is paid to the meaning and comparability of measures, their longitudinal stability and situation specificity, and to the validity (or sometimes invalidity) of statistical analyses employed. One rather discouraging conclusion that emerges is the inadequacy of most available measures of personality functioning in childhood. As a result, time and again the authors are forced to decide that the evidence is inconclusive as to how far boys and girls do in fact differ on this or that characteristic.

Nevertheless, Eleanor Maccoby and Carol Jacklin are not content to sit on the fence with regard to key issues. They conclude that many of the beliefs about sex differences are unfounded; this applies to interest in social stimuli, suggestibility, self-esteem, skills in various different types of learning, analytic cognitive style, achievement motivation and response to auditory and visual stimuli. In contrast, they argue that it is fairly well established that girls have greater verbal ability than boys, that boys excel in visual–spatial ability and in mathematical ability, and that males are more aggressive. This last difference is thought to have an important biological component because (i) it is manifest in similar ways in both man and subhuman primates; (ii) it is cross-culturally universal; and (iii) levels of aggression are responsive to sex hormones. To a lesser extent, this male predisposition toward aggression probably also extends to dominance, competition and other related behaviours.

There is a particularly useful critical discussion of both the evidence on differential rearing of boys and girls and on the theories put forward to explain the acquisition of sex-typed behaviours. The authors conclude that there is a surprising degree of uniformity in the way the two sexes are socialized. On the other hand, they note the dearth of information on father–child interaction. Recent studies are beginning to fill that gap and, interestingly, they find that, even in infancy, fathers play an important role. But they tend to interact with their children in ways which are different from those of mothers (see e.g. Lamb, 1977a, b). Perhaps unexpectedly, Maccoby and Jacklin find that boys tend to have more intense socialization experiences than girls—they receive more punishment and more praise and are subject to more pressure to behave in sex appropriate ways. Both psychoanalytic and social learning theories of sex differentiation are found lacking and there is a leaning towards a modified type of "self-socialization" cognitive explanation, as put forward by Kohlberg (thought to work in conjunction with processes of direct reinforcement and simple imitation).

Throughout the book the authors show a technical mastery of a vast body of evidence and their appraisal of it is generally balanced, thoughtful and well-informed. Indeed, there is very little to quarrel with in their conclusions, so far as they go. On the other hand, the review is not entirely free of flaws and, more particularly, it is incomplete in several crucial areas which cause their overall statement on sex differences to be possibly somewhat misleading.

The authors accept that males are more vulnerable to all sorts of physical hazards but the evidence on this point, and on physiological differences generally, is not discussed in any detail. Curiously, there is a neglect of the well-established observation that throughout childhood girls are biologically more mature and, of course, reach puberty some 18 months earlier than boys. Surely, this is likely to have some psychological significance (or if it does not, that too warrants discussion). No mention is made of the findings from the California longitudinal studies that the timing of puberty

The agency aimed to recruit and then develop foster parents, treating them as members of the therapeutic team. Only small numbers were recruited at a time and they were given a full educational programme as well as intensive back-up support. At the time of reporting, 175 children had been placed and 42 had passed through the project. Of these only three moved on to an institutional placement. A similar scheme has been reported from the Ska treatment centre in Stockholm (Kalveston, 1976). Though not a controlled study the report of the successful placement of 40 extremely disturbed children is highly encouraging. They were fostered by a group of stable families living mostly in country districts and they appeared to have had a distinct therapeutic effect on the child.

One of the best documented British schemes, The Family Placement Project (Hazel *et at.*, 1977) set up by a university group working with a social service department is designed for adolescents aged 14–17 with severe problems, including violence and psychiatric disorders. In all cases a contract is drawn up for the adolescent and those working with him, setting out the goals and expectations of the placement. At the end of the second year of the project's life 49 adolescents had been accepted with only five breakdowns.

As yet no guidelines have been established for the types of psychiatric disorder or any other characteristics which will suggest which child will most benefit from specialized fostering. No data are currently available on whether the long term prognosis is affected. A surprising feature, perhaps is that intensive selection procedures to choose the foster parents have been used in very few of the schemes which appear to be working well.

In summary it would appear that if psychiatrically disturbed children or adolescents are placed in a standard type of foster home, lacking extensive back-up support, a high rate of fostering failure can be expected. The evidence to date suggests that not only is this outcome unlikely in a specialized fostering service for disturbed children, but that these placements may well prove to be a powerful addition to the range of treatments available in child psychiatry. Though some guidelines appear to be emerging very few definite statements can as yet be made and further research is essential. With the very large number of children passing through foster care even fairly simple data collected nationally could greatly increase our understanding of child and family characteristics which will predict successful placements.

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demonstrated. In a children's home contact with the same house parent for at least 2 years has been shown to be associated with a lowered rate of psychiatric disorder in 5 to 12 year old children (Wolkind, 1977). Perhaps the most important finding, however, is that of Tizard and Rees (1974), who demonstrated how children brought up in residential nurseries and who previously might well have been considered unsuitable for adoption could be successfully adopted at or after the age of three. Findings such as this raise the strong possibility that it might be the structure of long term fostering rather than damage within the child which has been the bar to the successful placement of the psychiatrically disturbed child.

PROFESSIONAL FOSTERING

The near impossible role demanded of many long term foster parents is often seen in the "tug of love" battles between natural and foster parents reported in the press. The foster parent is expected to provide love, affection and stability for a child, but at the same time has contractually committed himself to return the child willingly at short notice, either to the natural parents or to the social work agency. [This is an area where legislative action—as in the United Kingdom's Children Act (H.M.S.O., 1975) may well be able to reduce, at least partly, this constant stress.] It is often difficult for the foster parents to know whether they are regarded as clients or colleagues by the placing agency. For both the child and foster parents the uncertainty cannot be conducive to a stable family atmosphere. For both there is the knowledge that one or other partner to the relationship can easily ask for an end to the placement. Because of these difficulties the role of the foster parent is currently undergoing critical evaluation and a variety of types of substitute homes are being developed. Of particular relevance to the care of the psychiatrically disturbed child is the professional or specialized foster parent, an individual who will quite definitely be treated by workers in the placing agency as a colleague and will be paid either a salary or a freelance fee for caring for a child. The placed child will be one who will be expected to produce difficulties and the foster parents' role will be to cope with these difficulties. This type of service has been tried experimentally and now a growing number of agencies are recruiting professional foster parents (Pugh, 1976). A number have been set up for mentally and physically handicapped children, but the most popular schemes are those for disturbed adolescents who have either been before the courts or brought up in a children's home. An encouraging feature of many of these schemes is that from the start a built-in evaluation programme has been established. Though none of these can be regarded as fulfilling the criteria of fully controlled trials, the initial results give definite grounds for optimism.

SPECIALIZED CARE FOR THE DISTURBED CHILD

A relatively long running scheme which demonstrates well the philosophy behind many more recent projects is that described by Bauer and Heinke (1976). Begun in 1968 in Wisconsin the programme aimed to place children in middle childhood who had emotional and behavioural problems and of whom the majority had either experienced fostering failures or had been brought up in long stay children's homes.

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BOOK REVIEWS

Play. Catherine Garvey. Fontana/Open Books, London, 1977, pp. 128, £1.00 paperback.

The series to which this little book belongs is aimed at non-specialist educators. It gives an account of recent as well as of many older studies, and provides references for further reading. Catherine Garvey makes a good job of the difficult task of writing for the general reader.

Play with movement, objects, social roles and with language and communication is discussed. The need to compress into little over a hundred pages an account of activities that can range over the whole gamut of voluntary behaviour in many species is not without pitfalls. For instance, the author's lucid account of her own research procedure is somewhat incongruously placed in the introduction "What is Play?"; separated by several intervening chapters on different topics, subject populations and even species from examples from her own work. There are some irritating inaccuracies of reference and attribution of theoretical orientation. But these are commendably few. It is not entirely obvious why a whole chapter on the development of smiling in infants was included, although smiles or rather more often, giggles and laughter, can serve as delimiting or accompanying signals in human social play. The author's caveat that "a smile is by no means a reliable index of a playful orientation" indicates her generally careful and undogmatic approach.

A difficulty could arise for the reader from the identification of play as "behaviour in the simulative mode" and "the non-literal use of resources". This seems apposite to the author's own area of pretend and language play. It is less illuminating for an understanding of play-fighting prior to the eruption of canine teeth in some species of dogs, for instance. One could have wished instead for a more definite link of findings to a fuller list of the various characteristics of play that are being teased out in current studies. It seems a pity to blur these criteria by providing what looks like yet another arguable definition. It is also a little at variance with the author's repeated and careful warning that play activities are likely to have a variety of different functions. However, these difficulties probably arise inevitably from the need to condense complex information. The book makes enjoyable reading, with lots of examples, and references to a wide range of studies from horizontal leaps of kittens, evaluation of effects of manipulating objects on problem solving, to examples from the author's own interesting studies on tones and gestures that delimit playful from informative discourse, and the "rituals" of communal chants. The book should prove very useful to those who are interested in the subject but have little access to information about it otherwise.

Susanna Millar

Aspects of Reading Acquisition. Edited by J. T. Guthrie. Johns Hopkins University Press, Baltimore, 1976. pp. xv + 222. £9.70.

As an inveterate symposiast, I have no doubt of the value of preparing a paper for delivery at a symposium. At its best, it can force the contributor to review, rethink and summarize his views on a particular topic. The value to other participants is often mixed, depending on whether real discussion or mutual flattery predominate in the pauses between papers. The value to outsiders of having the proceedings published is often doubtful. It all depends on the contract between the editor and the participants. In my view, it is preferable to ask for written versions as opposed to spoken deliveries, on the understanding that these are clearly subject to editing of style, length and content. Otherwise, what appears to have happened to Guthrie, can all too easily occur—the editor is forced to publish a pot-pourri of contributions of varying length, quality and relevance.

This symposium essentially consists of seven contributions sandwiched between a brief curtain-raising introduction contributed by the editor and a diplomatically worded overview contributed by Joanna Williams. In between, Benson presents a succinct review of adult alexias which has little relevance to reading acquisition in children, but is worth reading in its own right. Entwistle presents a long, rambling, poorly written account of children's expectations in reading. As an example of how not to handle weak data, it stands out from the remainder of the contributions. Menyuk presents a thoughtful discussion on the parallel between the comprehension of phonology and early reading. The work discussed has interesting implications for differentiating groups of children with different types of reading problems.

By far the most interesting chapter is that contributed by Satz and his colleagues. He has the most clearly articulated developmental neuropsychological theory of dyslexia, and in this chapter he describes a four-year predictive study. It has a sophisticated awareness of the problems of classification as well as of the problem of base-rate effects on prediction. As an accessible overview of his work, the chapter is recommended.

In contrast, Kinsbourne describes a more pedestrian approach to visual and auditory strategies in early reading. Samuels argues the case for a skills analysis approach to understanding the reading process. He is well aware that sub-skills should not become goals in themselves. Reading for meaning must remain the overall goal. This chapter is followed by one by Resnick and Beck in which they illustrate how a skills analysis approach can be translated into practical teaching procedures. The two chapters complement each other nicely in illustrating how basic theoretical models relate to teaching practice.

Like the other reviewers, I wish I could avoid the analogy of the curate's egg, but I cannot. Free-ranging intellectual exercises are acceptable for the symposiasts. The resulting product should be compact with a nourishing yolk. Instead, the present product resembles a poorly cooked omelette. The hungrier the reader, the more he will enjoy it, but the dish is far from cordon-bleu standards.

WILLIAM YULE

Autism, Diagnosis, Current Research and Management. Edited by E. R. RITVO, B. J. FREEMAN, E. M. ORWITZ and P. E. TANGUAY. Spectrum Publications, New York, 1977. pp. 284. £13.05.

THE SUDDEN and continuing popularity of childhood autism for research and philanthropic endeavour which began some 15 years ago is astonishing. There cannot be another medical condition as rare which has stimulated so many conferences and symposia, a journal of its own, a steady procession of monographs and compilation volumes as well as flourishing parent organizations throughout the world. The explanation must be sought in the nature of the condition itself, suggesting as it does that the answer to its etiological enigma will illuminate many important psychological functions, and in the competence of the affected families.

The present book contains a collection of papers presented in 1975 at a weekend seminar for 600 people, parents and professionals, organised by the Neuropsychiatric Institute of the University of California, Los Angeles and the National Society for Autistic Children in the U.S.A. Like previous such collections, this volume presents a then up-to-date overview of the field coloured by the biases of its chief participants. Drs. Ornitz and Ritvo view the phenomena of childhood autism as expressing an underlying fault in the modulation of sensory input leading to alternating hypo- and hyper-responsive states and stimulus-seeking behaviour, arrests and delays in personality development and secondary disturbances of perception.

The individual contributions vary greatly in quality and style. Detailed reports of research data alternate with global summaries. The absence of reported discussions between participants means that divergent opinions are not reconciled and often not even made explicit. The uninitiated reader will as a consequence find it difficult to get an overall picture of agreed concepts and established knowledge although the seminar clearly aimed to inform everyone concerned with the care of autistic children.

The strengths of the volume lie in the sections on education and management with their illuminating and detailed descriptions of a number of current treatment programs and, in the chapter on Language, the only one based on a collaborative venture between the UCLA Department of Psychiatry and the London Institute of Psychiatry.

SULA WOLFF

An Experience-based Approach to Language and Reading. Edited by CARL BRAUN and VICTOR FROESE. University Park Press, Baltimore, 1977. pp. x + 284. £11.25.

THIS BOOK has 12 chapters by five academics from the field of education, one by a committee formed to develop guidelines for the evaluation of English teaching, and three appendices of minimal use in the United Kingdom.

The committee's contribution is a check list with which to face teachers, worthy, formidable and exhaustive: "How does the programme reflect the latest scientific knowledge about language?" it wants to know, and more elliptically: "What materials or help are provided in selecting and purchasing a wide variety of materials?" and so on interminably.

The other contributors pursue the eponymous theme in their various ways, testifying to value and rationale and advising on the classroom methods to be adopted. This dual role of exegesis and tactical instruction proves very demanding for the team: they sit uncomfortably between two stools and we get neither gospel nor guidebook. Vigorous editing would have helped. There are yards of verbiage ripe for excision, quite a few syntactic peculiarities, and frequently a lack of clarity and direction. So we are often ignorant of the stage of linguistic development we are dealing with, for example, and pupils being taught how to address an envelope are advised in the next sentence to record information from interviews and disseminate it to the community, to evaluate social services and decide which are unnecessary (p. 161). Elsewhere we are suddenly removed from establishing the concept "roundness" to the discussion of "isosceles" and "humiliation".

The more narrowly conceived, practical chapters are the most successful, although sometimes almost unbelievably trite. Victor Froese is a notable exception to this stricture. The book as a whole has little to say which has not already been more economically said.

LESLIE RIGLEY

Child Guidance and Delinquency in a London Borough. D. GATH, B. COOPER, F. GATTONI and DOROTHY ROCKETT. Oxford University Press, London, 1977. pp. xiii + 189. £7.00.

THIS IS the 24th publication in the Maudsley Monograph series. The principal aim of the research reported upon was to examine variations in child guidance referral and delinquency rates within the area of Croydon, a London borough since 1965. Attempts are made to tease out the influence of neighbourhood and school on both delinquency and child guidance referral rates. The influence of general practitioners on child guidance referral rates was also examined. The research is preceded by a 39 page historical review of child psychiatry and child guidance at a national and international level.

The research primarily relates to the period 1962–1966, when many changes were envisaged in terms of child care and social welfare generally (e.g. Children and Young Persons Act, 1963; The Government White Paper "The Child, the Family and the Young Offender", 1965). The data are derived from the records of official agencies only and, predictably, the analyses made are hampered by their incompleteness. Child guidance and delinquency rates varied considerably within Croydon but they were also significantly and positively associated (e.g. tau = +0·52 for number of offenders and clinic referral rates). Furthermore, both rates had similar associations with demographic and socio-economic indices. However, differences in delinquency and clinic referral rates could not be determined entirely by neighbourhood effects. The influence of school was usefully underlined in this report although it was not possible to establish its precise contribution to either delinquency or clinic referral rates.

The report could easily be criticized from a number of viewpoints, particularly on the grounds that it uses only data recorded by official agencies. No data are provided on children not referred to clinics or not known officially as delinquents. The authors explicitly recognize this limitation amongst others.

The main value of this research is probably in highlighting the variation in "problem areas", even within one small area, as well as to hint at some possible important influences requiring closer examination. At a time of limited resources and high demand on all child care services, the approach could be more extensively adopted by local authorities to ensure that the services they offer do indeed have effects and that these are in an acceptable direction.

R. MALIPHANT

Child Behaviour Problems. An Empirical Approach to Management. Roger McAuley and Patricia McAuley. Macmillan, London, 1977. pp. viii + 240. £7.95 hard back, £3.95 paper back.

At last, this is the comprehensive but not over-long British textbook on the assessment and treatment of child and family problems using the increasingly varied approaches derived from learning theory.

For a long time behaviour therapy was associated in the minds of most child psychiatry personnel with simple rewards and punishments to control difficult behaviour. When tried, often in desperation where all else had failed, it was often done in a mechanistic manner without adequate preliminary analysis of the intricate system of interactions between children, parents, teachers and others; with inevitable off-putting lack of the hoped-for quick results.

However, now that some behaviour therapies have been shown to be useful, more professionals are interested in "how to do it". This is especially true since the burgeoning of family therapy; for within this small group context, the here-and-now interventions of the therapists on the interactions of the family members frequently openly utilize the methods of applied behaviour analysis and therapy—accurate observations and recording, task-setting, modelling, contracting as well as positive reinforcement of behaviour to be encouraged. Whatever else one is attempting to do in order to change individual family members' attitudes or to help them to be in touch with their own and others' feelings, what the therapist actually does and what he gets the family members to do has become important for many workers.

This book sets out the current knowledge about behaviour analysis and therapy with children and families, clearly and simply, giving many examples of cases relevant to those working in the fields of child psychiatry, social work and child care in all its forms. Intervention strategies are described in detail, the problems discussed and practical solutions outlined as far as they have been worked out. Throughout the book there is a sensitive recognition of cognitive, attitudinal and emotional factors, and an open acknowledgement that reinforcement theory may not be enough. There are all the references to additional books and journal articles you will need unless you are already an expert in the field.

Child psychiatry departments and guidance clinics are certainly offering an incomplete service and could be seen as negligent if they are not teaching and making use of the sorts of skills set out clearly in this book; social service teams, Children's Homes and nurseries should have at least some members familiar with the principles. There is no doubt that this book will fulfil the needs in this regard of all these groups and agencies for some time to come.

Roy Howarth

After Grace—Teeth (A Comparative Study of the Residential Experience of Boys in Approved Schools). S. Millham, R. Bullock and P. Cherrett. Chaucer Publishing Co., London, 1975.

After its well-known research on the boarding public schools, the Dartington Social Research Unit turned its attentions to the approved school system for the residential care, treatment and custody of young offenders. Approved schools have since become community homes with education, part of a flexible system of community homes set up under the 1969 Act. This does not diminish the interest and relevance of this book, which by and large describes current practice by the same people in the same places.

Eighteen schools were studied with their 1100 resident boys. The authors portray the boys, the goals of the schools, the schools themselves, and what happens in and around them. Boys were followed up after leaving the schools and their performance and experiences are described. Attention is given not only to the harder and colder facts but also to the attitudes and feelings of the people involved. The researchers' approach was disciplined by a comprehensive conceptual framework for the analysis of schools.

The most important conclusions reached are: that ostensibly similar establishments were really very different in their ways, contradicting the sociologist's orthodoxy that the commonality of comparable institutions is more significant than their variety; and that the variety of residential experience contributes (among many other influences) to variety in boys' performance and experience after leaving. An attempt is made to characterize the more helpful school environment.

The book should be read by those concerned with residential schools, and because it is written with consummate clarity and wit they will be rewarded with some wonderful images: "At a nautical school one captain (headmaster) would hasten out to salute any passing ship on which any of his old boys served; the sight of such an august figure standing in the teeth of a gale paying courtesies to a distant sludge barge convulsed his boys, but they realised it stood for something".

D. N. MARTIN

Listen to the Children! A Study of the Impact on the Mental Health of Children of a Parent's Catastrophic Illness. Cancer Care Foundation, Inc. and the National Cancer Foundation, Inc., One Park Avenue, New York, N.Y. 10016. $2.50.

THIS PAMPHLET purports to be a research report based on a study of 88 children from 40 families in which one parent was a cancer patient. As a piece of scientific research the report has little merit and many methodological limitations including a small demographically atypical sample, unrefined measurement techniques, and many potential sources of experimenter bias. Despite these contaminants which raise questions regarding the generalizability or scientific merit of the pamphlet, there are some aspects of it which may warrant the attention of mental health professionals who are working with children of chronically ill parents. The anecdotal reports and general issues discussed in the pamphlet are important ones, and call attention to a relatively understudied group of children. There are several fine papers and books in the literature dealing with the impact of a parent's death on a child, but little has been written of the child who lives at home with a chronically and potentially terminally ill parent. As modern treatment techniques have dramatically prolonged the lives of cancer patients, one can predict that the number of children exposed to such stresses will only increase. Despite the shortcomings noted above, there are probably many who would like to examine this pamphlet.

GERALD P. KOOCHER

Single Case Experimental Designs: Strategies for Studying Behavior Change. M. HERSEN and D. H. BARLOW. Pergamon Press, Oxford, 1976. pp. xiii + 374. £6.25.

THIS IS a welcome, timely and well-written book. It has long been paradoxical that, on the one hand, interest in individual differences early this century led to studies of groups and away from studies where the one individual was examined repeatedly, while, on the other hand, behaviour modifiers study individual cases but often ignore individual differences. In their early chapters, Hersen and Barlow trace these developments and argue that single case designs are needed to build new therapeutic techniques, whereas group designs are needed to test the techniques and compare the effectiveness of treatments.

They present the case for good measurement and discuss the different types of measures the clinician should obtain. Their discussion of observational codes is not as detailed as it could have been, but it is probably adequate as an introduction.

In Chapters 5 and 6, they discuss various permutations and combinations of the ABA (or reversal) design. They argue that careful monitoring of the patient's behaviour can allow one to capitalize on fortuitous changes in his environment as well as to measure changes related to deliberate treatment. The logic of the argument is very simple—namely that one is wanting to show a one-to-one relationship between onset of treatment and onset of change. The authors give so much detail of minor variations that this simple point is in danger of being lost in a sort of statistical Kama Sutra. Their discussion of the Multiple Baseline design is, in contrast, a very valuable presentation of the designs most useful in clinical settings.

Chapter 8 is a key chapter contributed by Alan Kazdin with all the scholarliness one expects evaluation of recently initiated programmes and experimentation with new models of care, mistakes similar to those of the past are likely to recur.

Beyond a general commendation that this book is well worth reading for its wealth of thought-provoking papers, one can only mention here that there are sections devoted to research and policy, attitudes, ethical issues, epidemiology, early intervention, working with families, residential and community services, psychiatric services and finally two papers about cost-effectiveness analysis. Readers of this journal will be interested in a historical survey of the treatment of autistic children, by E. Schopler, and several papers about the important role of psychiatry in mental retardation services. Wortis reminds us that Rutter found over a quarter of the retarded children on the Isle of Wight with significant psychiatric disorder, a rate over three times that of normal controls. Even browsers, without special commitment to mental handicap, will enjoy papers such as "A Theory of the New Leisure Class" by F. P. Woodford, which looks at the prevailing work ethic and industrial therapy through a serious comparison with life in the 19th century, such as at Jane Austen's Mansfield Park, concluding that consideration of past times and activities devised by the former landed gentry to counteract boredom and isolation could lead to the provision of a more satisfying and dignified way of life for the handicapped than the present factory work-orientated approach. I look forward to further volumes in this series.

P. GRAHAME WOOLF

Roots of Caring, Sharing and Helping: the Development of Prosocial Behaviour in Children. PAUL MUSSEN and NANCY EISENBERG-BERG. W. H. Freeman, San Francisco, 1978. pp. 212. Hardback £8.60, Paperback £3.30.

OUR MORAL standards are enshrined in our laws, our religions and our Constitutions. Most of us know how we ought to behave, and recognize that only gods are capable of such consistent morality. But there are times when even by our mediocre standards moral behaviour is conspicuously absent. In March 1964, Kitty Genovese, a New York waitress, returned home late at night. In the car park adjacent to her apartment block she was attacked and stabbed, she screamed for approximately half an hour before dying. When the police interviewed the neighbours, 38 claimed to have heard the screams, several had gone to the window and witnessed the attack, no-one went to her help and no-one phoned the police until after she was dead. It was this well-publicized incident of massive callousness which sparked off the North American boom in the psychology of prosocial behaviour.

This book is the first coherent and general review of the 15 years' research that has followed. Designed as an introduction to the field for the reader in developmental psychology it fills a wide gap left by Hoffman's theoretical review (Hoffman, 1975) and multi-author compilations such as that of Lickona (Lickona, 1976). An attempt has been made to minimize the jargon so often found in American psychological texts and I am pleased to report that the language caused no indigestion.

The child development literature is comprehensively reviewed; this is an excellent source book, and there is adequate reference to cultural studies (Turnbull, 1972) and to the controversial ideas of the sociobiologists (Wilson, 1976).

The chapters cover the largely experimental work on the different variables affecting prosocial behaviour, such as personal differences, socialization experiences, moral reasoning and empathy, the mass media and the immediate influences surrounding a prosocial act.

The authors draw attention to the shortage of naturalistic studies, particularly reprehensible in this field since the major stimulus to research has been the fact that although people know what they ought to do, in real life they somehow do not get around to doing it. After all, no-one has suggested that the 38 witnesses of Kitty Genovese's murder were callous psychopaths, they were probably just like you and I.

KIRK WEIR

REFERENCES

HOFFMAN, M. L. (1975) Developmental synthesis of affect and cognition and its implications for altruistic motivation. *Devl Psychol.* **11,** 607–622.

LICKONA, T. (Editor) (1976) *Moral Development and Behaviour.* Holt, Rinehart & Winston, New York.

TURNBULL, C. M. (1972) *The Mountain People.* Simon & Schuster, New York.

WILSON, E. O. (1976) *Sociobiology: The New Synthesis.* Harvard University Press, Cambridge, MA.

Developmental Psychobiology: the Significance of Infancy. Edited by LEWIS P. LIPSITT. Lawrence Erlbaum Associates, Hillsdale, NJ, 1976. pp. x + 137. £7.40.

THIS COLLECTION of five essays is based on the contributions to a symposium at the 1974 meeting of the American Association for the Advancement of Science. Each essay is followed by a commentary from one of the other contributors and an Epilogue is provided by Jerome Kagan.

The first essay by Campos charts the history of heart-rate as a psychological tool in the study of modality sensitivity, conditioning, habituation, individual differences, etc. His own results show that while a 9-month-old infant is "fearful" (i.e. manifests cardiac acceleration) of the visual cliff, a 5-month-old is not. The interpretation of cardiac acceleration as fear or distress is supported by the infant's reactions to strangers and the demonstration that heart-rate changes and facial expression are closely associated. This latter demonstration would have been a significant contribution were it not for the more recent conclusion of Lewis *et al.* (in press) that there is little synchrony between facial expression and heart rate changes. Regrettably, this contribution does nothing to assuage my scepticism of the utility of a discipline so bereft of theory.

Freedman's chapter emphasizes the biological component of the heredity–environment transaction and offers interesting, if dated, evidence of the temperamental differences between Chinese- and Caucasian–American infants. Environmentalists however, are unlikely to be convinced by the dubious evidence offered in support of sex differences: boys, in many different cultures, apparently tend to draw vehicles whilst girls draw flowers. Five pages of drawings illustrating this equivocal observation are uninformative. In his commentary on this chapter, Campos makes the nice distinction between what is innate and what is hereditary, and also proposes a plausible cultural explanation of the Chinese–Caucasian differences.

In her chapter on "Genetic determinants" Scarr-Salapatek admonishes nativists for overstating their case and pursues the elusive topic of "causes of development" before offering the reader a most illuminating discussion of the concept of "canalization" in development; she shows the limits to which data from studies of family correlations, individual consistency or several cultures can inform us about canalization, and makes the important point that similarity in environments may canalize development as much as similarity in genotypes.

Zelazo argues, and demonstrates, that reflexive responses like the neonatal stepping response can be maintained and brought under instrumental control long after they are thought to be inhibited by "higher" processes. However, the implications he draws from his data on neurological examinations and mental tests seem quite unjustifiable.

Lipsitt pulls these contributions together in masterly fashion and indulges in some intriguing speculations upon the origins of anger and hedonism. Surprisingly, he sees no inconsistency in his demonstration of heart-rate acceleration as part of a "savoring mechanism" (a hedonic response) and Campos' earlier demonstration of the same autonomic responses as an index of fear. Kagan's lively epilogue brings the proceedings to a lucid close but only after cautions about apportioning variation to biological or psychological factors—a pity these are based on misplaced metaphors from physics.

This book has a welcome coherence which makes the impact of its substance the greater. It would be a valuable accession for any library, personal or institutional.

CORINNE HUTT

REFERENCE

LEWIS, M., BROOKS, J. and HAVILAND, J. (in press) Hearts and faces: a study in the measurement of emotion. In *Affect Development* (Edited by LEWIS, M. and ROSENBLUM, L.). Plenum Press, New York. In press.

J. Child Psychol. Psychiat., Vol. 19, 1978, p. 411. Pergamon Press. Printed in Great Britain.

ANNOUNCEMENT

The Annual Meeting of the Association for Pediatric Education in Europe will be held in Cracow/Warsaw (Poland) during the period 18–21 September 1978.

The main topic will be:

"Teaching communication with children".

Requests for information should be sent to:

Professor Z. Kobielowa, M.D.,
Head of the 1st Pediatric Clinic,
Pediatric Institute of University Medical School
Nicolaus Copernicus,
Wielicka, 265,
30-663 Cracow,
Poland.

separation,
rhesus monkeys

NIS, LYNDA M. (1978) Maternal separations in rhesus monkeys within a social . *J. Child Psychol. Psychiat.* **19,** 313–327.

ary—The mother–infant relationship in rhesus monkey social groups is one nship within a nexus of relationships, and changes in any part of the system the whole. During maternal separation experiments, therefore, monkey mothers listurbed by removal from the social group, and this affected their responses to nfants on reunion. The infants seemed to be more affected by their mothers' iour than that of their group companions. The effects of separation on the infants xacerbated if they were left "at home" and if their mothers were preoccupied ocial companions. The latter depended on the mothers' social status.

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autism, developmental dysphasia,
language disorders

CANTWELL, DENNIS, BAKER, LORIAN and RUTTER, MICHAEL (1978) A compara study of infantile autism and specific developmental receptive language disorder— Analysis of syntax and language function. *J. Child Psychol. Psychiat.* **19,** 351–362.

Summary—Autistic boys were systematically compared with an age and I.Q. matc sample of developmental "dysphasic" boys on reliable measures of syntax and langu functions. The groups did not differ on syntactical usage as determined by morphologi transformational and phrase structure rules. However, autistic children were nificantly less likely to make spontaneous remarks and significantly more likely to delayed echoes, thinking aloud/action accompaniments and inappropriate echoes themselves. It is concluded that the autistic child's language deviance is not jus reflection of language impairment.

I.Q. changes/stability,
longitudinal study

.EY, C. B. and OWEN, C. F. (1978) The extent of individual changes in I.Q. for between 6 months and 17 years, in a British longitudinal sample. *J. Child Psychol. at.* **19,** 329–350.

nary—Using a London longitudinal sample of 109 subjects from varied social rounds, changes in I.Q. scores between every pair of eight ages from 6 months years are presented. Comparisons are made with Pinneau's (1961) results on a rnian sample born a generation earlier. The systematic tables include medians uartiles of signed changes, absolute changes, and changes to be expected on the of regression. Between 3 and 17 years, scores of 50% of subjects changed by 10 or more, and 25% by 22 points or more; between 8 and 17 years equivalent s are 10 and 17 points. Changes are larger from infancy scores. By presenting the nts of change alongside the more familiar correlations, it is clear that high corre- s are compatible with substantial amounts of change. In addition to their research st, it is hoped that the tables will be of value to practitioners in the educational linical fields as providing estimates. which are almost certainly conservative, of

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school adjustment, follow-up,
behaviour problems, teacher ratings

COX, T. (1978) Children's adjustment to school over six years. *J. Child Psychol. Psych* **19,** 363–371.

Summary—A group of 97 children from schools serving "deprived" catchment ar were studied over a 6 year period up to age 12. Teachers' ratings of their overall sch adjustment, obtained on four separate occasions, were compared. Over the four oc sions between 14 and 23% of the children were judged to be poorly adjusted altho there was appreciable variation from one occasion to the next in terms of which child were so rated. Several sub-groups of children were identified according to their patt of ratings over this period; in particular, a group of six children showing persis behaviour problems. The need for the early identification of children showing p school adjustment is stressed.

autistic children, echoing,
chronometric study, semantic processing

THEODORE and LUCY, PETER (1978) Echoing in autistic children: a chrono-
ıdy of semantic processing. *J. Child Psychol. Psychiat.* **19,** 373–378.

ry—The time required to produce a verbal response has been used extensively
ex of the complexity of the mental operations that underlie the comprehension
luction of language. An analysis of the discourse of five autistic children with an
monstrates that echoic speech depends on simpler, more limited decoding of
terances than the child's creative original speech. By contrast, two normal
show no significant difference in reaction times between imitative and spon-
productions using the same measure. This finding lends support to the
hat autistic children rely on two strategies for their language production made
ry by a cognitive deficit.

mother-child vocal interaction
communication

, HILTON (1978) A description of aspects of mother–infant vocal interaction.
ld Psychol. Psychiat. **19,** 379–386.

mary—This paper was concerned to describe aspects of the vocal interaction of
ng-class mothers and their young children (average age 11.4 months). Information
rovided about the frequency of vocalizations, the occurrence of simultaneous
nces and the distributions of speaker-switch pauses. The results confirmed the
g of previous studies that the alternating mode of communication was predominant.
he basis of a new method of analysis it was suggested that the mothers played the
active part in the regulation of the interaction by pacing their utterances to those
child, although the child contributed by rarely interrupting ongoing utterances.

chimpanzee infants,
nursing care,
abnormal behaviour patterns

DIENSKE, HERMAN and GRIFFIN, ROCHELLE (1978) Abnormal behaviour patt
developing in chimpanzee infants during nursery care—a note. *J. Child Psychol. Psych*
19, 387–391.

Summary—During mildly understimulating nursery care, chimpanzee babies
infants developed various abnormal behaviour patterns. These patterns were ne
always lacking during care by a chimpanzee mother. The abnormalities closely
sembled those known of human infants. It was attempted to attribute their developm
to a restricted possibility of showing behaviour directed to the caretaker. Redire
clasping could be attributed to a lack of clinging to an adult. Body-rocking develo
when locomotion was hampered. The actiology of digit-sucking was inconclusive,
compatible with the hypothesis that it arose if babies fell asleep while alone. It is s
gested that these infantile deviant behaviour patterns can be used as indications for
optimal adjustment of parental behaviour to the needs of a particular infant.

NOTES FOR CONTRIBUTORS

General

1. Submission of a paper to the Journal will be held to imply that it represents an original contribution not previously published (except in the form of an abstract or preliminary report); that it is not being considered for publication elsewhere; and that if accepted by the Journal it will not be published elsewhere in the same form, in any language, without the consent of the Editors.
2. Papers should be submitted to any Editor whose name and address appears on the inside front cover of the Journal.
3. Reprints can be obtained at a reasonable cost if ordered at the time when the first proofs are returned. A reprint order form will be sent with the galley proofs.

Manuscript Requirements

1. Papers submitted should be concise and written in English in a readily understandable style. The typescript, where possible, should follow the conventional form—introduction and review of literature, materials and method, results, discussion. A brief summary, not exceeding 100 words, must be provided; this will be printed at the end of the paper. Manuscripts should be typewritten, *double spaced* on A4 paper, and should be submitted *in duplicate* to facilitate refereeing. In the case of a long title, an abbreviated version of it should be supplied by the author for the page heads. It will be appreciated if authors clearly indicate any Greek characters. To conserve space, *less important portions of the papers,* such as description of methods, records of experimental results, etc. *should be marked for printing in smaller type.* Descriptions of techniques and methods should normally be given in detail *only when they are unfamiliar.* The address of the author to whom requests for reprints should be directed must be given at the end of the manuscript. Authors will receive proofs for correction when their contributions are first set; page proofs will be sent only when the amount of alteration makes it advisable, but authors are requested to keep alterations at this stage to a minimum, or it may be necessary to make a charge. The author should retain a carbon copy for personal use. Please note that the original manuscript and diagrams will be discarded one month after publication unless the Publisher is requested (on submission of the manuscript) to return original material to the author.
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   PIAGET, J. (1953) *The Origins of Intelligence in Children* (Translated by Cook, M.). Routledge & Kegan Paul, London.

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